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ANNUAL REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA

YEAR ENDED JUNE 30, 1912

Vol. II

ENGINEER DEPARTMENT REPORTS

WASHINGTON
1912

UNITED STATES OF AMERICA
GOVERNMENT PRINTING OFFICE

TABLE OF CONTENTS.

	Page.
Ashes, collection of	64
Ashes, specifications for collection of	72
Asphalt and cements, report of inspector	80
Asphalt block pavements, specifications for	299
Asphalt, sheet, specifications for	291
Asphaltic macadam, specifications for	291
Automobile board, report of	241
Bids, schedules of	260
Bituminous macadam pavement, specifications for	291
Boilers, steam, report of inspector	186
Bridges, report of engineer	43
Buildings, report of inspector	179
Cement sidewalks, specifications for	313
Chief clerk, report	259
Contracts, list of	278
District Building, report of superintendent	289
Electrical engineer, report of	243
Elevators, report of inspector	185
Engineer Commissioner, report of	5
Garbage, collection of	64
Garbage, specifications for collection of	72
Gas and meters, report of inspector	232
Highways, report of engineer	35
Insanitary buildings, report of board for condemnation of	285
Macadam, bituminous, roadway pavement, specifications for	291
Municipal architect, report of	193
Parking, report of superintendent of trees and	90
Permit clerk, report of	240
Plumbing board, report of	193
Plumbing inspector, report of	188
Record division, reports of	259
Refuse, miscellaneous collection of	64
Refuse, specifications for collection of	72
Repairs, report of superintendent	202
Resurfacing sheet asphalt pavements, specifications for	305
Roads, suburban, report of superintendent of	38
Rock Creek Park, report of assistant engineer	288
Sewers, report of superintendent	142
Sewers, specifications for	317
Sheet asphalt pavements, specifications for	291
Sidewalks, cement, specifications for	313
Steam engineers, report of board of examiners	187
Street cleaning, report of superintendent of	64
Street extensions division, report of	87
Streets, report of superintendent	37
Subsurface and building divisions, reports of	96
Surface division, reports of	35
Surveyor, report of	84
Trees and parking, report of superintendent	90
Water department, report of superintendent	96
Water registrar, report of	131
Wharf committee, report of	281

249184

UNITED STATES OF AMERICA
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TABLE OF CONTENTS.

	Page.
Ashes, collection of	64
Ashes, specifications for collection of	72
Asphalt and cements, report of inspector	80
Asphalt block pavements, specifications for	299
Asphalt, sheet, specifications for	291
Asphaltic macadam, specifications for	291
Automobile board, report of	241
Bids, schedules of	260
Bituminous macadam pavement, specifications for	291
Boilers, steam, report of inspector	186
Bridges, report of engineer	43
Buildings, report of inspector	179
Cement sidewalks, specifications for	313
Chief clerk, report	259
Contracts, list of	278
District Building, report of superintendent	289
Electrical engineer, report of	243
Elevators, report of inspector	185
Engineer Commissioner, report of	5
Garbage, collection of	64
Garbage, specifications for collection of	72
Gas and meters, report of inspector	232
Highways, report of engineer	35
Insanitary buildings, report of board for condemnation of	285
Macadam, bituminous, roadway pavement, specifications for	291
Municipal architect, report of	193
Parking, report of superintendent of trees and	90
Permit clerk, report of	240
Plumbing board, report of	193
Plumbing inspector, report of	188
Record division, reports of	259
Refuse, miscellaneous collection of	64
Refuse, specifications for collection of	72
Repairs, report of superintendent	202
Resurfacing sheet asphalt pavements, specifications for	305
Roads, suburban, report of superintendent of	38
Rock Creek Park, report of assistant engineer	288
Sewers, report of superintendent	142
Sewers, specifications for	317
Sheet asphalt pavements, specifications for	291
Sidewalks, cement, specifications for	313
Steam engineers, report of board of examiners	187
Street cleaning, report of superintendent of	64
Street extensions division, report of	87
Streets, report of superintendent	37
Subsurface and building divisions, reports of	96
Surface division, reports of	35
Surveyor, report of	84
Trees and parking, report of superintendent	90
Water department, report of superintendent	96
Water registrar, report of	131
Wharf committee, report of	281

249184

EXTRACT FROM THE REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA FOR THE FISCAL YEAR ENDED JUNE 30, 1912.

OFFICE OF THE COMMISSIONERS OF
THE DISTRICT OF COLUMBIA,
Washington, December 2, 1912.

To the Senate and the House of Representatives of the United States of America in Congress assembled:

The Commissioners of the District of Columbia herewith submit for the information of Congress, pursuant to the requirements of section 12 of an act providing a permanent form of government for the District of Columbia, approved June 11, 1878 (20 Stat. L., 1908), a report of their official doings for the fiscal year ended June 30, 1912.

* * * * * * *

MERIT SYSTEM IN THE ENGINEER DEPARTMENT.

It is recognized that the character of the service rendered by the organized branches of the engineer department can not rise superior to the personnel of those branches. If the laws relating to public works be conceived with perfect wisdom and if the general direction of the service be on the highest possible plane, nevertheless inefficiency and extravagance will result if there is any departure from the merit system in dealing with the personnel. The raising of the pay of some individual in the service, for example, through the exercise of political influence and by means of an item in an appropriation bill, tends to lower the tone of the whole District service, exciting personal animosities, and being regarded as born of injustice and unfairness.

In a very large public service, like that of the United States, it seems to be true that the merit system can not be secured more effectively than through such a system as is provided by law and administered by the Civil Service Commission. The defects in this system are well described in a recent expression of the views of President Taft, which include the following:

> Even in the selection of the comparatively small number of employees in the Government service it has been found necessary to eliminate that personal equation which contributes so greatly to efficiency in private business.
>
> * * * * * * *
>
> This system, while vastly preferable to the former, is still woefully deficient as compared with the methods employed in private business. That faculty of judging human nature and selecting just the right man for a particular type of work which is the most valuable asset of the business man, and which contributes more than aught else to his success, is wholly lost to the Government. The man who passes with most credit the formal civil examination may be, often is, wholly lacking in initiative, push, and executive ability, and yet no better method of selecting Government employees has ever been devised.
>
> * * * * * * *

Congress has not extended to the District of Columbia the operation of the civil-service law, although for many years the commissioners sought such legislation.

There is now in effect in the District engineer (public works) branches a merit system which is fully described in the following order:

OFFICE OF THE ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.

Ordered:

That there is hereby created a board of promotions and appointments in the engineer department of the District of Columbia to consist of the two assistants to the engineer commissioner and the chief clerk of the engineer department.

1. The duty of this board shall be to recommend to the engineer commissioner the person most fit to fill, by promotion or appointment, each vacancy that may arise in the engineer department.

2. When a vacancy occurs in any office or department in the engineer department, it shall be the duty of the head of such office or department to make recommendation to said board as to the filling of said vacancy by promotion or appointment, and it shall be the duty of the board to forward such recommendation to the engineer commissioner, with its approval or disapproval, giving the reasons therefor.

3. Before making such recommendation the head of the office or department concerned shall examine and give careful consideration to all applications filed in the office of the commissioners during the six months previous for employment of the nature required in the vacant position, and to communicate with, or when practicable personally to interview, the more promising applicants in order to determine their relative fitness for appointment to such vacancy.

4. In the case of promotions in the service, the heads of offices or departments shall consider not only the claims to promotion of employees immediately in the offices or departments, but of all employees under the jurisdiction of the engineer commissioner.

5. In making recommendations for filling positions relative merit and fitness alone shall be considered, but weight may be given to length and faithfulness of employment in the District service. The hope of promotion, when deserved, tends to increase efficiency throughout the service.

6. It shall be the duty of the board on promotions and appointments carefully to consider all such recommendations and the reasons therefor, and in doing so it shall have authority to call before it any head of office or department to give further information regarding such recommendations. It will often be advisable for the board personally to interview candidates.

7. While no intricate procedure is imposed upon the board, it is expected that it will adopt such methods as will insure a fair consideration of all applicants and the selection for each vacancy of the person available who in the position to be filled can render the most valuable service to the District of Columbia.

8. These instructions will be carefully observed by all heads of offices and departments under the supervision of the engineer commissioner.

9. It is the purpose of the engineer commissioner, in so far as discretion is vested in him by law, to follow the recommendations of the board herein constituted.

W. V. JUDSON,
Lieutenant Colonel, Corps of Engineers, U. S. Army,
Engineer Commissioner, District of Columbia.

It is believed that the system above described avoids in large part the difficulties necessarily encountered in the Federal civil service, while at the same time taking human nature into consideration, as does the ordinary business man. This system also promotes discipline, and therefore efficiency, by attaching great importance to the opinions formed of men by their department superiors.

The very excellent results following the introduction of this merit system deserve to be recorded for the benefit of other cities.

ELIMINATION OF SUBURBAN GRADE CROSSINGS.

The District appropriation act for the fiscal year 1911 contained an appropriation of $50,000 for constructing a subway at the Cedar Street crossing of the tracks of the Baltimore & Ohio Railroad Co.

in order to eliminate a grade crossing. It was necessary to condemn certain land necessary to widen Cedar Street, so as to permit of the construction of this subway, and this land was acquired, and a contract for constructing the subway was entered into with the Baltimore & Ohio Railroad Co. The work has been completed, with the exception of certain grading and other incidental work, and the subway is being used for traffic, the railroad being carried overhead.

In their last annual report, and in the estimates for the fiscal year 1913, the commissioners submitted an estimate of $110,000 to provide for constructing a viaduct and bridge to carry Benning Road over the railroad tracks, but this appropriation was not made, and it has again been included in the estimates of the commissioners for the fiscal year 1914.

The commissioners believe that all such dangerous railroad crossings should be gradually eliminated, as they have been eliminated within the old city limits.

ROADWAY PAVEMENTS.

The sum of $579,050 was appropriated for paving new roadways and for repairing and repaving old roadway pavement. Of this amount, $425,000 was for resurfacing and repairs. In this paving work sheet asphalt, asphalt block, and asphaltic macadam was used.

The prices paid for constructing new sheet-asphalt pavement and asphalt-block and asphaltic macadam pavement were as follows:

	Per square yard.
Laying sheet-asphalt pavement 2½ (inches asphalt surface, 2 inches binder, before compression) with 6-inch concrete base	$1.70
Laying vitrified-block gutters with 6-inch concrete base	1.40
Laying 4-inch asphalt-block pavement with gravel base, inside the old limits of the city of Washington, meaning thereby south of Florida Avenue and east of Rock Creek	1.65
Laying 4-inch asphalt-block pavement with gravel base, outside the old limits of the city of Washington, meaning thereby north of Florida Avenue and west of Rock Creek	1.80
Laying 3-inch asphalt-block pavement with 4-inch concrete base, at any place within the District of Columbia	1.80
Laying 2-inch asphalt-block pavement with 4-inch concrete base, one square in length, to be selected by the Commissioners of the District of Columbia, should they decide to use this type of pavement	1.65

The prices for the current fiscal year 1913 are as follows:

	Per square yard.
Laying sheet-asphalt pavement (2½ inches asphalt surface, 2 inches binder, before compression), with 6-inch concrete base	$1.77
Laying vitrified-block gutters, with 6-inch concrete base	1.37
Laying asphaltic macadam pavement on 6-inch concrete base	1.67
Laying asphaltic macadam pavement on broken stone base	.99
Laying 2-inch asphalt-block pavement with 6-inch concrete base	1.76

The current prices for resurfacing and repairing asphalt pavements under contract during the year are as follows:

Laying sheet-asphalt pavement (2½ inches asphalt surface, 2 inches binder, before compression) with 6 inch concrete base	per square yard	$1.68
Laying sheet-asphalt surface (2½ inches before compression)	do	.64
Laying sheet-asphalt surface (resurfacing by heater method)	per cubic foot	.66
Laying asphalt binder (in connection with resurfacing work)	do	.38
Laying sheet-asphalt surface (for repairs and miscellaneous work, cuts, etc.) per cubic foot		.57

Laying asphalt binder (for repairs and miscellaneous work, cuts, etc.), per cubic foot..... $0.43
Laying sheet-asphalt surface for repairs, etc., within the space required by law to be kept in repair by street railway companies.....per cubic foot.. .63
Laying asphalt binder for repairs, etc., within the space required by law to be kept in repair by street railway companies.....per cubic foot.. .48

The types of roadway pavements laid during the year were the same as in past years, sheet asphalt and asphalt block, with a limited amount of asphaltic macadam. About $150,000 was spent on this last-named class of work.

The repair of sheet-asphalt pavements by use of the heater method was continued, about 53,000 square yards being thus repaired during the year.

New types of pavements were used during the year as follows: A 2-inch asphalt-block pavement was laid on a concrete base on Maine Avenue between Third and Four-and-a-half Streets, instead of the usual 5-inch asphalt-block pavement laid on a gravel base, and a 6-inch concrete roadway, coated with bitumen, was laid on Michigan Avenue between First Street east and the Washington City Reservoir. While these pavements have been down but a short time, good results are anticipated from them.

Table showing square yards and mileage of roadway pavements to June 30, 1912.

	Sheet asphalt and coal tar.	Asphalt block.	Granite block.	Vitrified block.	Cobble.	Asphaltic macadam.	Macadam.
Square yards[1]	3,343,978	648,368	664,347	29,602	73,130	34,622	1,431,635
Miles	146.93	33.02	25.96	1.40	3.84	1.75	92.10

[1] Includes gutters and pavements adjacent to street railway tracks.

The total mileage of streets in the District of Columbia is 581.

RESURFACING WORN-OUT PAVEMENTS.

The sum of $425,000 was appropriated for resurfacing and repairs to improved roadway pavements. This was an increase of $25,000 over the appropriation for the preceding year. The area of sheet asphalt pavements in the District of Columbia is about 3,343,978 square yards, and of asphalt block 648,368 square yards, which is probably a greater area than any other city in the world with the population of the District of Columbia.

During the fiscal year 1912, 183,770 square yards of old pavement were replaced, as compared with 183,000 square yards replaced during the preceding fiscal year.

It is believed that the great area of asphalt pavement can be most economically maintained if the average age be retained at about eleven years. This would mean a resurfacing of about one-twenty-second of the entire area in sheet asphalt surface annually. An appropriation of $330,000 for resurfacing and repairs will, it is calculated, after other pavements are maintained, permit the resurfacing of an amount annually that will retain at its present average life the entire amount of street surface that is now in sheet asphalt. Inasmuch as the average age of all sheet asphalt pavements is still in excess of 11 years, an amount is asked for the fiscal year 1914 in

excess of $330,000; that is to say, $390,000. The expenditure of this amount will effect a further reduction in the average age of the sheet asphalt pavements.

The contract for resurfacing and repairing sheet asphalt pavements was a two-year contract, which expires July 1, 1913. It has been the policy for a number of years to do all of this work of resurfacing and repairs by contract, but in the District appropriation act for the fiscal year 1913 the commissioners were authorized to purchase a portable asphalt plant, at a cost of not to exceed $7,500, and to operate the plant under their immediate direction in doing such work of repairs to asphalt pavements as in their judgment might be economically performed by the use of the plant.

This plant has been purchased and will be operated during the present fiscal year in doing all work of repairs, leaving only the resurfacing work to be done under contract. When the permanent municipal asphalt plant, hereinafter referred to, is authorized by Congress, and established, the commissioners believe that it will be unnecessary to do any of the resurfacing or repair work by contract, as they believe it can be more economically performed by operating these asphalt plants under their immediate direction.

The portable plant above referred to is excellently adapted to the production of a one-course asphaltic macadam surface for streets already macadamized. Legislation is earnestly desired which will remove any limitation from the useful operation of this plant.

A large proportion of the older asphalt-block pavements laid on gravel base are in bad condition, due to local settlements of the foundation. On many of these pavements practically nothing has been expended for maintenance for a period of 10 or 15 years. A systematic repair of these pavements was commenced during this year and the sum of $24,000 has been spent on this work. An expenditure of a like amount for the next two years will put these pavements in first-class condition.

MUNICIPAL ASPHALT PLANT.

In their estimates to Congress for the fiscal year 1913, the commissioners asked authority to establish in the District of Columbia a municipal asphalt plant, to be located on a site on the river front between Thirteenth and Fourteenth Streets SW. The appropriation was not made, but in lieu thereof the sum of $5,000 was appropriated to enable the commissioners to make a thorough investigation of the desirability and cost of establishing such a plant, with directions to report to Congress at the beginning of its next session in December, 1913. Immediately after the passage of this act the commissioners employed Mr. D. E. McComb, an expert in such matters, to make the investigation, and it is now in progress. The report of the results thereof will be made early in the next session of Congress.

SIDEWALKS AND ALLEYS.

Two hundred and fifteen thousand dollars was spent for paving sidewalks and alleys in all parts of the District of Columbia. Sidewalks are constructed of cement and the work is done under contract. Alleys are paved with vitrified or asphalt block and the work is done

by day labor. The prices paid under contract for laying cement sidewalks during the fiscal year 1912 were as follows:

For large jobs adjoining paved streets.....per square yard..	$0.9675
For large jobs adjoining unpaved streets and for all small jobs, per square yard.	1.20

For the present fiscal year (1913), the prices are as follows:

For large jobs adjoining paved streets.....per square yard..	$0.96
For large jobs adjoining unpaved streets and for all small jobs, per square yard.	1.20

One-half of the cost of laying sidewalks is assessed against the abutting property, and ordinarily the commissioners await a petition from the owners of more than one-half of the frontage along a block before ordering the work; an exception is, however, made where a walk becomes dangerous; in such cases the commissioners order the work done without waiting for a petition. The law requires the commissioners to advertise for two weeks their intention to lay sidewalks and curb and to pave alleys, and after a hearing to order the work done when, in their opinion, it is necessary for the public safety, health, comfort, and convenience. The demand for laying sidewalks and paving alleys is quite constant. During the year about 66,000 square yards of sidewalks and about 46,500 square yards of alley pavement were laid.

Prior to the fiscal year 1912 all moneys received from assessments for paving sidewalks and alleys were repaid to the appropriation for the current year in which they were collected, and augmented the appropriation so as to permit a larger amount to be expended than was actually appropriated for the year. By a provision contained in the District appropriation act for the fiscal year 1912, however, all collections from assessments are required to be paid into the Treasury.

SUBURBAN ROADS AND STREETS.

The appropriations made for the construction and repair of suburban roads and streets aggregated $228,100, of which $140,000 was for repairs and the balance for road construction. Approximately $15,000 was expended during the year for oiling and tarring roads.

The use of asphaltic macadam in the repair of old roads and constructing new roads was one of the features of the year's work. Asphaltic macadam by the penetration method in new construction and repair required the use of 2 gallons of material per square yard, at a cost varying from 18 to 20 cents per square yard above that of ordinary macadam. Asphaltic macadam by the mixing method was used in constructing roadways, at a cost of 98 cents per square yard for a 2-inch layer rolled in place. On one street, Michigan Avenue, west of First Street, a concrete base was laid which was covered with a coating of asphaltic oil on one part and a coating of tar on another, and the cost of this work, including a 6-inch concrete base with a thin bituminous covering, was about 80 cents per square yard.

The use of road oils and various surface treatments was continued for dust laying and road preservation. The cost of treatments with oil or tarvia B, including the cleaning and sand covering, varied from 1½ to 3 cents per square yard of surface treated. It is proposed that

some of the most heavily traveled macadam roads leading out of the city, and in the built-up section, adjacent to the city limits, upon which work of additional repair has become expensive and burdensome, be resurfaced with asphaltic macadam.

BRIDGES.

The work of stiffening and strengthening the Calvert Street Bridge over Rock Creek was completed August 24, 1911. This work not only rendered this bridge much safer, but reduced the vibrations by a marked degree. In connection with the work, the roadway width of 39 feet with two 6-foot sidewalks was reduced to a roadway width of 26 feet with two 6-foot 10-inch sidewalks, so as to bring the vehicular travel inside of the truss line, and a new flooring of dressed lumber was laid. It is believed that the bridge is now safe for use and no new bridge will be needed until the growth of the city beyond Rock Creek shall require a bridge with a wider roadway.

Plans have been completed for the construction of a bridge over Rock Creek on the line of Q Street, but owing to the delay in acquiring the land necessary for approaches the work of construction has not yet been begun. This bridge is estimated to cost $275,000, and an appropriation for its complete construction has been included in the estimates for the next fiscal year. Contract was made for four bronze buffaloes, to be placed two on either side of the bridge approach.

The commissioners have again included in their estimates for the next fiscal year an item for constructing a bridge across Rock Creek on the line of Pennsylvania Avenue, in connection with which it is proposed to widen Pennsylvania Avenue on both sides of the creek so as to provide a better means of communication with that part of the city formerly known as Georgetown.

STREET RAILWAYS.

On February 1, 1912, the Senate adopted the following resolution:

Resolved, That the Commissioners of the District of Columbia are hereby directed to communicate to the Senate, at as early a date as practicable, their views as to the necessity of establishing additional street car lines in the District, the routes over which they should be built, and whether they should be extensions of the existing lines or independent companies, with blue prints accompanying.

In response to this resolution the commissioners submitted a report to the Senate, under date of March 20, 1912, in which they recommended that Congress:

First. Facilitate the consolidation of all street railway lines within the District, so that they shall be under one management and control.

Second. Refuse charters to new companies which propose to build extensions within the District.

Third. Give consideration to the passage of a law providing that street railway lines constructed in the outlying sections shall be covered wholly or in part by assessments levied on abutting property benefited.

Fourth. Authorize and require the building of certain street railway extensions, which they believe to be immediately desirable, as follows: (*a*) On Eighteenth Street west, from G Street southward to

and into Potomac Park; (*b*) On Seventeenth Street west from Pennsylvania Avenue to U Street; (*c*) on Kennedy Street NW., from Fourteenth Street to and into Rock Creek Park; (*d*) on L Street south from Four-and-a-half Street west to Eleventh Street east; (*e*) from the north end of the Connecticut Avenue Bridge by meandering line to the western end of Massachusetts Avenue; (*f*) from the present terminus of the Mount Pleasant line to Argyle Terrace, mostly via Eighteenth Street NW.; (*g*) on Fourteenth and Fifteenth Streets NE., from H Street to East Capitol Street; and on C and D Streets NE., from Thirteenth to Fifteenth Streets; (*h*) on M Street NW., from Twenty-sixth Street to New Jersey Avenue.

The following legislation referring to street railways was contained in the District appropriation act, approved June 26, 1912.

Hereafter every street railway company in the District of Columbia shall keep its tracks and the spaces between and for a distance of two feet outside thereof at the crossings of the several streets which intersect their railroads, at all times free from snow and ice, and shall not spoil or deposit the same in such location and quantity as to impede or hinder traffic. And in the event of any street railway company failing and refusing to comply with this act, the necessary work may be done by the Commissioners of the District of Columbia, in their discretion, after notice to said company, the cost to be paid from the appropriation available for cleaning snow and ice from streets, sidewalks, crosswalks, and gutters and collected from such street railway company in the manner provided for in section five of an Act providing a permanent form of government for the District of Columbia, approved June eleventh, eighteen hundred and seventy-eight, and shall be deposited to the credit of the appropriation for the fiscal year in which it was collected.

LAW TO REGULATE PUBLIC UTILITIES.

The commissioners again recommend to Congress the enactment of a law to regulate the public utility corporations in the District of Columbia. A bill for this purpose (S. 3812, 62d Cong. 2d Sess.), passed the Senate on April 20, 1912, and is pending before the House of Representatives. This bill provides for making the Commissioners of the District of Columbia a public utilities commission, as an additional and superadded power to their powers and duties as Commissioners of the District of Columbia.

The necessity of the establishment of such a commission is very urgent. There are many questions involved in the operation of public utilities in the District of Columbia which need to be handled by such a commission. These public utilities include street railways, gas and electric companies, and telephone and telegraph corporations. Among the matters affecting these public utilities which should be regulated by such a commission are the question of valuation of plant and properties, with a view to establishing rates based on proper earnings; joint use of trackage; uniform system of accounting; standards of measurement; testing of appliances, and other similar matters all with a view to securing fairness as between the public utility corporations and the public, and insuring to the latter reasonable service at reasonable cost. At present there is no body vested with power and authority to investigate such matters, to make necessary rules and regulations, and to see to their enforcement. As a consequence there is no data to show whether rates charged for service are excessive, whether the earnings are based on proper capitalization, whether capital stock is not watered, whether bonds have not been issued in excess of necessary requirements, whether the cor-

porations should not furnish better service at decreased rates and charges, and whether extensions necessary in street railway lines should be made by existing corporations or whether new corporations should be chartered.

If the bill which has passed the Senate and is now before the House shall become a law a method will be provided for the determination of these and other questions affecting public utility corporations, and the commissioners earnestly recommend the passage of such legislation during the next session of Congress.

SURVEYOR'S OFFICE.

The work of the surveyor shows an increase from that of the preceding year. It is divided into that done for private parties, for which fees are charged, and that done for the District of Columbia, for which there is no fee. The total amount received in fees during the year was $19,504.55, as compared with $21,496.17 for the last fiscal year, a decrease of $1,991.62. This is due to the less expensive character of the work done.

Six large subdivisions of agricultural land were created and surveyed during the year, adding 95 new squares. These were located in the northeastern and southeastern parts of the District.

The surveyor again recommends legislation which would authorize him to place upon his records the same method of designation of lots and blocks that is used by the assessor for assessment purposes. Under present conditions the assessor uses one method of designation and the surveyor another. For instance, in the older subdivisions the surveyor is required to designate a lot as being part of a block in such subdivision, whereas the assessor designates them by new square numbers, which are in continuation of the numbering of squares in the city of Washington. These old subdivision names are becoming very obsolete each year, and property owners are using the designation of the squares adopted by the assessor. This causes much confusion, and legislation to correct it is very important. An appropriation of $4,000 by Congress would accomplish what is desired.

The surveyor recommends also the widening of Georgia Avenue, from Florida Avenue to the District line; of Wisconsin Avenue, from Thirty-seventh Street to the District line; and of Thirteenth Street, from Spring Road to Longfellow Street, according to the highway plans. The widening of the two avenues named is being made necessary by the increasing traffic from the city into Maryland.

STREET AND ALLEY EXTENSIONS.

The following street-extension measures were passed during the year: The extension and widening of Colorado Avenue NW. from Longfellow Street to Sixteenth Street; the extension and widening of Kennedy Street NW. through lot numbered 800, square 2718; Rock Creek Drive NW. from Massachusetts Avenue southerly to Montrose Park; Lamont Street NW. through squares 2604 and 2605, to be a direct prolongation of Lamont Street as now existing east of Nineteenth Street; Underwood Street NW. from its present western terminus west of Eighth Street, west to the Piney Branch Road, with a width of 90 feet.

Twenty-four alley condemnation cases were filed during the year to open alleys in squares 2843, 518, 970, 794, 812, 111, 2857, 2843, 32, 3019, 2847, 2621, 2885, 2858, 2829, 2591, 757, 910, 2897, 2830, 2551, 3049, 377, and 2892.

Proceedings were also instituted to open minor streets in squares 2888, 2895, 16, and 3532, and also to establish a building restriction line on Columbia Road, between Fifteenth and Sixteenth Streets NW. Some of these cases have been finally completed, and others are pending, as shown in the report of the surveyor, District of Columbia.

TREES AND PARKINGS.

The number of trees planted on streets, in school yards, and on playgrounds during the year was 3,824, a decrease of 45 under the trees planted during the preceding year. The number of trees removed was 2,646, an increase of 432 over the preceding year. The net increase in the number of trees during the year was 1,178.

The total number of trees planted in streets, in school yards, and on playgrounds at the close of the year was 100,787, of which 99,867 are on streets.

There are 283.70 miles of streets on which trees have been planted, an increase of 3.18 miles over the preceding year. The mileage of trees on these streets is 567.40, an increase of 6.36 over the preceding year. The trees are planted on both sides of the streets, and the mileage is based on 352 trees per mile. The amount expended in the planting and care of trees was $39,670.58.

The varieties of trees planted were elms, gingkos, lindens, Norway maples, sugar maples, silver maples, pin oaks, red oaks, sycamores, and ash.

The work of spraying the trees by use of the high-power spraying machines purchased in the last two years has progressed very satisfactorily. By these means the leaf-eating insects were destroyed, and the trees are in fine condition. The average cost for spraying each tree was 6¾ cents.

STREET AND ALLEY CLEANING.

The street and alley cleaning division serves a population of about 331,000 and covers an area of approximately 70 square miles. It has charge of the sprinkling, sweeping, and cleaning of streets, avenues, and alleys, except such work on county roads and suburban streets as is done under the supervision of the superintendent of county roads. It also has supervision over the collection and disposal of garbage, ashes, miscellaneous refuse, dead animals, and night soil.

Previous to July 1, 1912, the work of street sweeping and cleaning alleys and unimproved streets was done by contract, but it is now done by day labor under the direct supervision of the superintendent of street cleaning. The area cleaned by machines was 2,167,000 square yards; the area of alleys cleaned was 1,033,000 square yards; the cleaning of unpaved streets amounted to 1,416,480 square yards. The cleaning by use of the white wings in the central portion of the city amounted to about 2,745,804 square yards. Three hundred thousand square yards of cobblestone, granite, asphalt block, and poorly paved streets were flushed twice weekly, and the smoother-

paved streets in the white-wing area were squeegeed two or three times a week, the area amounting to 1,766,000 square yards. To prevent dust during the summer and fall, about 60 to 70 miles of gravel and unpaved suburban streets were sprinkled and oiled.

Forty thousand dollars was spent for the purchase of new equipment.

By reason of the operation of this service under municipal control unit costs have steadily decreased, the averages being considerably lower than the cost of the work previously done under contract. In addition to the greater economy the work has been of a higher quality, the streets and alleys having been kept cleaner. The success of municipal street cleaning is due largely to the fact that it is much more flexible than the contract system. Under the contract system every street and every portion of each street received the same amount of sweeping and the same price was paid for each 1,000 square yards swept. Under the municipal cleaning system more effort is put on the streets and the portions of the streets which have the most traffic. Under the contract system the schedules were arranged for each day's work and that amount performed each day whether it required a full day's work or not. Under the present system continuous schedules have been arranged, so that each foreman and his gang cleans as much area as possible during the day and commences the next day where he left off the night before.

On the suburban streets calcium chloride and emulsifying oil is used for sprinkling instead of water. By this method the dust nuisance was almost entirely eliminated and less money was spent for sprinkling and oiling than for sprinkling alone during the previous year. This oil is required only about once every 10 days or 2 weeks, while sprinkling with water was necessary two or three times a day in dry weather. The use of the squeegee machines on the paved streets has resulted in keeping these streets almost entirely free from dust, whereas under the old system of cleaning only the heavier particles were removed and the dust remained to become a source of annoyance when disturbed by the wind or rapidly passing vehicles.

In times of snow and ice it has been the practice in preceding years to clean only the principal street-car intersections and crosswalks. During the past year, in addition to this, the spaces adjacent to the street-car stopping points were cleaned. After most of the snow was removed from the sidewalks to the gutters, gutter plows were used to open the gutters so that the water could run off, and men were employed in opening spaces from the center of the street to the gutter, spreading the snow and otherwise assisting it to melt and the water to run off to the sewers. No attempt was made to haul snow and ice from the streets, except from the intersections of the street-car lines and other congested localities.

A new street-cleaning stable was erected in square 1043 in the southeast section of the city, and the old stable in square 367 in the northwest section of the city is being reconstructed. The capacity of both of these stables is such as to accommodate over 200 horses.

The cost of machine cleaning is $0.162 per 1,000 square yards; alley cleaning, $0.324 per 1,000 square yards; white-wing cleaning, $0.152 per 1,000 square yards; flushing, $0.272 per 1,000 square yards; squeegeeing, $0.096 per 1,000 square yards; and oiling, $1.065

per 1,000 square yards. The amount of the appropriation expended in this service was $260,000.

REMOVAL OF CITY REFUSE.

Forty-seven thousand four hundred and forty-five tons of garbage, 203,568 cubic yards of ashes, 115,378 cubic yards of miscellaneous refuse, 21,266 barrels of night soil and 17,492 dead animals were collected. The contract prices of collection are as follows:

Garbage	$68,400
Ashes	73,150
Miscellaneous refuse	17,000
Night soil	16,600
Dead animals	2,855

The unit costs are as follows

Garbage	per ton	$1.44
Ashes	per cubic yard	.36
Miscellaneous refuse	do	.14
Night soil	per barrel	.78
Dead animals	per animal	.163

These unit costs are arrived at by taking the contract cost less deductions for fines.

MUNICIPAL COLLECTION OF CITY REFUSE.

The contracts for the collection and disposal of city refuse are all five-year contracts which expire June 30, 1915. With a view to obtaining less objectionable, more efficient and more economical services than are rendered by the contractors, the commissioners recommended to Congress last year, and have also recommended in their estimates for the fiscal year 1914, that an appropriation of $10,000 be made for the purpose of investigating and reporting on the collection and disposal of city waste, including the construction of disposal plants. It is estimated that the contractors for the disposal of city waste have invested in collecting equipment and disposal plants several hundred thousand dollars which will practically have been paid for during the periods for which they have had contracts with the District, so that the District has probably been paying to the contractors, in addition to the actual cost of the work and the contractors' profits, the cost of these disposal plants and collection equipment. If the plants were owned by the District they would probably have a life of from 40 to 50 years and could be economically operated either by utilizing the services of prisoners in the disposal of the refuse, or by letting a contract on the basis of the contractor's leasing the disposal plants from the District of Columbia. The commissioners earnestly urge the appropriation asked by them to investigate this matter.

BUILDING OPERATIONS.

The estimated value of building work during the year, not including the buildings of the United States Government, was $16,772,183, an increase over the preceding year of $2,074,149. The building work of the United States, as reported to the inspector of buildings, which

includes the new Bureau of Engraving and Printing and the new Post Office Building under construction, amounted to $3,678,700. This makes a total value of building operations under permits granted during the year of $20,496,938. The number of permits issued for buildings, repairs, awnings, signs, engines, motors, elevators, etc., was 6,270, an increase of 117 over the preceding year. The number of permits granted for projections beyond the building line was 3,286, an increase of 806 over the preceding year.

The number of dwelling houses constructed was 2,174, an increase of 252 over the preceding year; the number of apartment houses erected was 29, an increase of 11 over the preceding year; the number of business buildings erected was 225, a decrease of 136 under the preceding year; the total number of new buildings erected was 2,535, an increase of 242 over the preceding year.

The distribution of the cost of these improvements, including repairs to existing buildings, is as follows:

	Buildings.	Repairs.
Northeast	$879,150	$40,570
Southeast	559,819	49,603
Northwest	7,212,110	1,558,130
Southwest	288,300	144,295
County	5,600,867	439,339
Total	14,540,246	2,231,937

Total for buildings and repairs, $16,772,183.

There are estimated to be 58,222 brick buildings and 25,559 frame buildings in the District. This is an increase during the year of 2,170 brick buildings and 365 frame buildings.

The increase in the value of private building operations is primarily accounted for by the permit issued for the construction of the new Arlington Hotel, valued at $3,000,000.

The fees collected for the issuance of permits amounted to $33,219.95, an increase of $2,865.49. These fees covered the expenses of the office for the year.

The character of construction of both new buildings and the remodeling of old buildings was improved, particularly in apartment houses, office buildings, and theaters, where fireproof construction is very generally, if not entirely used.

The building regulations were amended during the year, one of the principal amendments affecting the location of public garages, with the purpose of concentrating them in localities already in part occupied by such establishments. They are now permitted to be built in the same square and adjoining similar establishments without the previous requirement of obtaining further consent of abutting property owners. The fire limits were enlarged so as to include the recently built up section of the District lying between Park Road and the Piney Branch Valley and eastward to what is known as Spring Road. The act regulating the height of buildings was amended by Congress during the year so as to permit combustible buildings to be erected to a height of 55 feet instead of 50 feet.

FIRE ESCAPES.

Material progress was made during the year to secure compliance with the fire-escape law, one inspector in the building office being detailed on this work. Two hundred and twenty-four exterior wall fire escapes have been erected, and in the new buildings planned architects are providing additional interior stairways, thereby eliminating the necessity for exterior fire escapes.

ELEVATORS.

The elevators in the District of Columbia are inspected by two inspectors under the direction of the inspector of buildings. The number of passenger elevators installed during the year was 44, freight elevators 82, a total of 126.

The inspectors report a satisfactory condition in this branch of the service.

There have been no accidents or loss of life due to breakage or derangement of machinery, the only fatalities which occurred being due to personal carelessness.

While there is no obligation placed by law on the commissioners to inspect buildings owned or occupied by the United States Government, these inspections were made to the number of 93.

INSPECTION OF PRIVATE BUILDINGS.

All private building construction in the District of Columbia is inspected under the direction of the inspector of buildings. The total number of inspections during the year was 73,112, an increase of 180 over the previous year. There are eight regular field inspectors engaged on this work, and one temporary inspector employed during the heaviest part of the building season. Each inspector makes about 27 daily inspections. Increased efficiency in this work could be accomplished if better means of transportation was provided for the inspectors. This has been recommended in the estimates of the commissioners.

INSPECTION OF STEAM BOILERS.

The number of steam boilers inspected by the inspector of boilers was 544. The compensation of this official is received from fees paid by the owners of boilers. The total amount received from such fees during the year was $2,370, and the expenses of inspection $406.25, leaving a net compensation to the inspector of $1,963.75.

CONSTRUCTION OF MUNICIPAL BUILDINGS.

During the year 28 buildings and additions to buildings were under construction as follows, all of which are either completed or will be completed on or before the beginning of the next calendar year:

Chemical engine house, No. 2, Pennsylvania Avenue and Twenty-eighth Place SE.

McKinley Manual Training School, No. 130, third extension, Rhode Island Avenue and Seventh Street NW.

Playground shelter, Rosedale Playground, Eighteenth and Gales Streets NE.

Playground shelter, Georgetown Playground, Thirty-fourth Street and Volta Place NW.

Joseph Rodman West School, No. 163, Farragut Street, between Thirteenth and Fourteenth Streets NW.

Wisconsin Avenue Manual Training School, No. 164, corner Wisconsin Avenue and Thirty-third Street NW.

Grover Cleveland School, No. 165, corner Eighth and T Streets NW.

Randle Highlands School, No. 166, Thirtieth and R Streets SE.

Central heating plant, M Street High, Douglass and Simmons Schools, New Jersey Avenue and M Street NW.

Armstrong Manual Training School addition, P Street, between First and Third Streets NW.

Alexander Crummel School, No. 167, Gallaudet Street, opposite Central Avenue, Ivy City.

Cardozo Manual Training School, No. 168, First and I Streets SW.

Engine house, No. 24, Georgia Avenue and Rock Creek Church Road NW.

Takoma Branch Library, Fifth and Cedar Streets, Takoma Park, D. C.

Western High School addition, No. 117, Thirty-fifth and R Streets NW.

Mortuary building at Tuberculosis Hospital.

Garage and lodge at Fort Reno.

Addition to District cement warehouse, Fourteenth and D Streets SW.

Stable building for street cleaning department, Thirteenth and G Streets SE.

Burrville School, No. 170, Division Avenue and Hayes Street NE.

Military Road School, No. 171, Military Road, between Thirteenth and Fourteenth Streets NW., extended.

Police precinct stations, Nos. 1, 4, 6, and 8, making alterations and installing new cells.

Addition to engine house, No. 20, Wisconsin Avenue, Fortieth and Warren Streets NW.

James Ormond Wilson Normal School, No. 162, Eleventh and Harvard Streets NW.

Manual Training School, No. 172, twelfth division, O Street NW., between North Capitol and First Streets.

Rebuilding stable for the street cleaning department, between Ninth, Tenth, N, and O Streets NW.

Pound and stable building for health department, South Capitol Street, between H and I Streets SW.

Northwest wing Western High School, No. 117, Thirty-fifth and R Streets NW.

The plans for the Colored Normal School and the colored men's ward at the Home for the Aged at Blue Plains, D. C., have also been completed, and these buildings will be under construction during the fiscal year 1913.

The municipal architect has continued to show marked ability in the construction of schoolhouses. He secures the utmost for each dollar of expenditure, and our schools and other buildings of recent years are attractive in appearance and models of convenience and safety. The cost has been less than buildings of the same class in other cities. It averaged $0.1574 per cubic foot, while school buildings in the cities such as St. Louis and Boston, which are the nearest to ours in materials and construction, averaged 19 and 23 cents per cubic foot, respectively.

Of the plans of all municipal buildings constructed during the last year, 20 were prepared and designed by the municipal architect and 8 by private architects. With a view to economy, the work has been standardized as much as possible.

The percentage of the entire cost of the preparation of plans, supervision of construction, and commission to architects, on the average yearly cost of all buildings which have been constructed by the municipal architect, is less than 3½ per cent.

REPAIRS TO MUNICIPAL BUILDINGS.

All municipal buildings are kept in repair by the superintendent of repairs under the direction of the municipal architect.

The appropriation made for repairs and improvements to school buildings and grounds was $70,000, and this was insufficient to make all the repairs necessary. About 15 per cent of the appropriation was spent on heating apparatus.

There are now about 160 school buildings and 100 other municipal buildings which have to be kept in repair.

Since 1909, $185,000 has been appropriated for the purpose of providing fire protection for school buildings. This has been expended in replacing wooden stairways in brick buildings, with fireproof construction, the removal of all unsuitable fire ladders and fire escapes, improving exits, fireproofing heating apparatus, corridors, constructing fireproof storage for fuel and ashes, and the purchase and erection of fire extinguishers and fire alarms. Practically all of the work of this character necessary has been accomplished, and the school buildings of the city are considered to be in a safe condition.

The present estimated value of school buildings is about $11,000,000, and the commissioners believe that not less than 1 per cent, or $110,000, should be appropriated each year for their maintenance and upkeep.

The amount expended in repairing damages caused by fire in school buildings was about $1,600.

For repairs and improvements to engine houses and grounds $12,000 was appropriated and expended, and for repairs to police stations $5,500 was appropriated and expended.

In repairing plumbing in school buildings $23,573.39 was expended.

In Police Court Building $1,000 was expended in repairs.

CONDEMNATION OF INSANITARY BUILDINGS.

The board for the condemnation of insanitary buildings examined 441 buildings, of which 356 were located on streets and 85 on alleys; of these 271 on streets and 47 on alleys were demolished and 107 on streets and 38 on alleys were repaired.

The total number of buildings examined by the board since its creation by Congress on May 1, 1906, to the fiscal year ending June 30, 1912, has been 2,630, of which 1,503 were demolished, 1,031 repaired, and 96 are still pending. Of those demolished 1,081 were on streets and 442 on alleys, and of those repaired 678 on streets and 353 on alleys.

The number of tenants in buildings on streets and alleys compelled to secure other quarters through action of the board during the year is estimated at 795, and the total number since the creation of the board 4,325.

The estimated number of tenants in buildings on streets and alleys benefitted by repairs through action of the board during the year is estimated at 498, and the total number since the creation of the board 3,711.

The assessed valuation of improvements removed on streets during the year is $28,600 and on alleys $3,800. In calculating this assessed valuation only the improvements are considered.

The removal of insanitary and unsafe buildings has been accomplished with the cooperation of owners and agents who have taken the initiative in many cases to have the necessary changes and alterations made to place the buildings in a habitable and sanitary condition. During the year it has been necessary for the board, however, to demolish 14 houses because of refusal or neglect of the owners to obey the notices of the board. The law provides that in such cases the cost shall be assessed against the property, but this has not been necessary, as the value of the old material in the premises paid for the cost of demolition.

Based upon recommendation of the board, legal action is being taken to convert an alley in square 16 into a minor street, and the board makes recommendation that similar action be taken in alley in square 878.

The board recommends that a systematic effort be made to condemn the interior of squares where the alleys are used for habitation, as has already been done in the case of Willow Tree Alley, converting the ground into playgrounds and social centers, with public bathing pools. It makes specific recommendation that Goat Alley in square 449 be so treated, the estimated cost in this case being $60,000.

PLUMBING AND PLUMBING INSPECTION.

During the year the plumbing office made 45,875 inspections, a decrease of 160 under the number made in the preceding year. The average number of inspections made by each inspector per day was about 16. A number of amendments were made in the plumbing regulations during the year tending toward a simplification of plumbing construction work. Forty-three cases of violations of the plumbing regulations were prosecuted in the police court.

Under the compulsory drainage act, 12 premises were provided with sewer and water connections, upon the failure or refusal of the owners to install such services. The cost of this work was $1,605. Under the provisions of law this cost is assessed against the property.

PLUMBING BOARD.

During the year the plumbing board held 25 sessions for the examination of candidates for license as master plumber and gas fitter. Forty-four applicants were examined, 24 of whom were new applicants, and 20 were applicants for reexamination. Of the former 9 passed and 15 failed, and of the latter 7 passed and 13 failed.

PUBLIC CONVENIENCE STATIONS.

Three public convenience stations are in operation. They are located at Seventh and Pennsylvania Avenue NW., Thirteenth Street and Pennsylvania Avenue NW., and Ninth and K Streets NW. During the last year the patrons of these stations numbered 2,623,560, and the receipts from pay compartments aggregated $3,040.40. The cost of operation was $10,418.78.

STREET LIGHTING.

There are 15,752 street lamps of all kinds in the District of Columbia, as compared with 14,905 at the end of the last fiscal year, an increase of 847 lamps. These are divided as follows:

Mantle gas		9,609
Naphtha		164
Electric arc		1,222
Electric incandescent		4,256
Street designation lamps, gas	441	
Street designation lamps, electric	60	
		501
		15,752

Previous to July 1, 1911, these lamps were lighted under contract, but they are now lighted directly by the public utility corporations under rates fixed by Congress in the District appropriation act for the fiscal year 1912.

Nine hundred and forty-one naphtha lamps were replaced during the year with either gas lamps or incandescent electric lamps. This change not only effected a saving in the annual cost of maintenance, but greatly improved the service. The contract price for naphtha lighting was $22.80 per lamp per annum, while the gas lamps are but $18.40 per lamp and the electric lights $15 per lamp per annum.

Experiments have been made during the year with an improved type of mantle gas lamps, on which alabaster globes are used, similar in appearance to those used in incandescent electric lighting.

The lighting of 7½ miles of streets was improved by the installation of 100 candlepower incandescent electric lights, in place of existing gas and electric arc lamps.

The appropriation act for the fiscal year 1912 required 400 of the series-inclosed and multiple-inclosed arc lamps to be replaced with 4-ampere magnetite lamps or other form of improved lighting, the change to be made by April 1, 1912. In compliance with this act 201 4-ampere magnetite lamps were installed, and the remaining 199 lamps were replaced by an improved form of incandescent electric lighting.

Legislation is requested by the commissioners in their estimates for the next fiscal year to require steam railroads to maintain lights along the streets occupied on their rights of way. The commissioners believe that existing law requires railroads to pay for such lighting, and legal proceedings are pending to require them to do so. In order to remove all question regarding the matter, however, a new law is recommended.

FIRE-ALARM, TELEGRAPH, AND TELEPHONE SERVICE.

Seven miles of underground cable were installed during the year and 0.52 miles of cable withdrawn, the total amount of this cable in service at the end of the year being 115.88 miles.

Four and twenty-nine hundredths miles of aerial cable was in service at the end of the year.

Twelve new fire-alarm boxes were placed in service during the year, making the total number at the end of the year 532. The number of fire alarms received and transmitted during the year was 1,163, of which 80 were false.

The total number of patrol boxes in service at the end of the year was 357.

The total number of telephone, telegraph, electric light, and trolley poles in the District of Columbia is 15,829.

GAS AND METER INSPECTION.

Under the office of the inspector of gas and meters, 21,379 gas meters were tested as compared with 10,365 during the preceding year, and the amount of fees collected was $7,090, an increase over the preceding year of $2,632.90.

The legal requirement regarding the illuminating power and purity of gas provides that the illuminating power shall equal 22 candles. Gas is supplied by two public-service corporations, the Washington Gas Light Co., and the Georgetown Gas Light Co.

On 43 days during the year the illuminating power of the gas furnished by the Washington Gas Light Co. was below the legal standard, and on 37 days that furnished by the Georgetown Gas Light Co. was below the legal standard.

Throughout the year the amount of ammonia and sulphur in the gas was wholly within the maximum limits fixed by law.

The existence of hydrogen sulphide in the gas furnished by the Washington Gas Light Co. was found on 56 days and in that furnished by the Georgetown Gas Light Co. on 37 days during the year.

AUTOMOBILE BOARD.

The automobile board examined 2,393 persons desiring permits to operate motor vehicles and issued permits as follows: To operate electric vehicles, 200; gasoline, 1,790; steam, 22; motor cycles, 331. Fifty applicants were rejected. In addition there were issued 82 permits to the employees of the United States and the District of Columbia to operate motor vehicles for use in their public business for which no fee was charged. The revenue received from fees for these permits amounted to $6,022, an increase over the preceding year of $1,562. There were also issued 3,924 identification tags for motor vehicles, the fees for which amounted to $7,848, an increase over the preceding year of $2,534. Of these tags, 182 were for electric vehicles, 3,075 for gasoline vehicles, 35 for steam vehicles, and 632 for motor cycles.

Two permits issued to operate motor vehicles were revoked on the recommendation of the superintendent of police.

PERMITS.

The permits issued by the permit clerk of the engineer department for various purposes other than building permits amounted to 27,195, an increase of 4,178 over the previous year. The fees paid for these permits amounted to $17,910, an increase of $2,894 over the previous year.

EXAMINATION OF STEAM ENGINEERS.

The report of the board of examiners of steam engineers shows that 52 examinations were held and 145 applicants examined, of which 55 were licensed and 90 rejected as incompetent.

PARKS.

In the District appropriation act for the fiscal year 1913 an appropriation was made for the acquisition of a park in the southeastern section of the city, to include the sites of Fort Davis and Fort Dupont, and to acquire the land necessary to extend Rock Creek Drive NW. from Massachusetts Avenue to Montrose Park, in order to make a parkway entrance to Montrose Park from Massachusetts Avenue. Proceedings to acquire the necessary land will be instituted during the present fiscal year. These were two of the park projects asked by the commissioners in their estimates of last year, but Congress failed to appropriate for the other parks requested, namely, Klingle Ford Valley Park, Piney Branch Parkway, and Mount Hamilton Park. Items for these parks have been included in the estimates for the next fiscal year.

In the Klingle Ford Valley it is proposed to condemn about 28.5 acres of land lying on both sides of Connecticut Avenue along Klingle Road, from Woodley Road to Rock Creek Park. The land proposed to be taken consists of some of the most desirable land in the District of Columbia available for park purposes. It is covered with a magnificent growth of trees of great age and will make a most picturesque and beautiful addition to the park system. Unless the land is acquired at an early date, improvements which are rapidly being made in this vicinity will require that it be graded for building purposes, and then this beautiful park area will become a dump until it is filled sufficiently to make it available for sale as building lots. This would lose to the District of Columbia a most beautiful natural park which could never be duplicated in this vicinity. This acquisition is more essential than any other land purchase now contemplated in the District of Columbia, as Klingle Ford Valley affords the only convenient entrance to the park system from a large portion of the District, and future generations may rightly condemn the present one if it permits the valley to be lost to public use.

Mount Hamilton Park, as proposed, is located on the Bladensburg Road NE., and contains 81 acres. It is estimated that an appropriation of $95,000 will be necessary to acquire the land. This park is also one of the chain of parks recommended by the McMillan Park Commission. There is at present no park in the northeastern portion of the District, and unless land is speedily acquired in this locality for park purposes the development of property is such that its price will be prohibitive. This tract is splendidly adapted for park purposes, being a wooded elevation lying 240 feet above the river and affording magnificent views of the city and surrounding territory.

The Piney Branch Valley Park includes the valley of Piney Branch, between Sixteenth Street and Georgia Avenue. This is well adapted for park purposes, as it consists of well-wooded slopes along Piney Branch. At some future date the park should be continued from Georgia Avenue to the Soldiers' Home, in order to connect Rock Creek Park with the Soldiers' Home. The acquisition of the land proposed at present is necessary to protect the bridge across Piney Branch at Sixteenth Street and to preserve the valley. The estimated cost of this project is $252,000, and the area to be condemned approximately 42 acres.

The commissioners have also included in their estimates for the next fiscal year an item of $40,000 for the condemnation of small park areas at the intersection of streets outside the limits of the original city of Washington, with the provision that one-half the cost shall be assessed as benefits.

When the original city of Washington was laid out parks and reservations were formed at the intersections of streets and avenues, and there are about 300 such parks, consisting of squares, circles, and triangles, with an area of about 170 acres. No provision was made when the streets of the city were extended into the remaining four-fifths of the District, and, as a consequence, no such parks exist in this section.

Such small parks have been recommended by the Senate park commission. While the sum of $40,000 will not acquire all of such parks needed, it will enable the commissioners to select sites in the various sections of the District outside of the city where the land can be obtained at a reasonable price. Locations have been tentatively selected to the number of 34, but it is estimated that the cost of that number would amount to $100,000. If the sum of $40,000 is appropriated, selections will be made from these 34 sites and a beginning made in extending the smaller park system now existing in the city to the built-up portion of the District outside the old city limits.

In 1902 there was published, as Senate Report No. 166, Fifty-seventh Congress, first session, the report of what has been variously called the Senate, the McMillan, and the Burnham Park Commission. Upon this commission served the great architects Burnham & McKim, St. Gaudens (standing first among American sculptors), and Mr. Olmsted, the leading landscape architect in this country. The preparation of the report cost nearly $70,000.

Among the lands recommended by this commission for park purposes some were contiguous to Federal buildings, or were to serve as the sites for Federal buildings, and it has been recognized that the Federal Government will sooner or later acquire them, but for the most part the lands to be purchased are not only essential to the creation of a great and suitable capital city, but will also serve to add to the comfort of local residents, and in many cases will advance the value of near-by lands owned by local residents.

With each passing year the natural growth of the city is not only raising the value of the lands to be acquired, but in many cases, by building operations, is interposing almost insuperable obstacles to the execution of the park plan. It is time now to act in this matter. It will soon be too late.

At the last session of Congress a law was enacted providing for a general system of assessments when parkways or park lands are acquired. This law is as follows:

Hereafter the United States shall not bear any part of the cost of the acquisition of land for street extensions, but when the condemnation of any land for such purposes is authorized by law the total cost of the land and the expenses of the condemnation proceedings shall be assessed as benefits; in any case where land is condemned for a parkway, including a street or streets, where such parkway is of considerable length with relation to its width, not less than one-half of the cost of the land, including the same fraction of the expenses of the condemnation proceedings, shall be assessed as benefits; and in any case where land is condemned for a public park not less than one-third of the cost of the land, including the same fraction of the expenses of the condemnation proceedings, shall be assessed as benefits.

All acquisitions of park lands proposed in the estimates of the commissioners and hereinbefore described follow the park commission's plan and the law above quoted.

It is not necessary to refer to other capital cities for examples of what should be done in this matter of acquiring park lands. It is only necessary to state that very many American cities are proceeding much more rapidly, and therefore, the commissioners believe, more wisely than are we here in the capital city of the nation. Boston, Kansas City, and many others are leading us in the development of their parks, and yet it is presumably to enable Washington to lead in such matters that so large a Federal contribution is made toward our local expenditures.

ROCK CREEK PARK.

The appropriation for the care and maintenance of the park during the year was $20,000. This was used in completing Morrow Road and the bridge thereon, oiling Beach Drive and Ridge Road, erecting a public convenience station at Pierce Mill, constructing a roadway on Beach Drive north of Military Road, and in the general care and maintenance of the park.

The construction of Morrow Road, leading from the intersection of Sixteenth and Kennedy Streets to the intersection of Beach Drive and Military Road, opened up a new entrance to the park which is much used.

The work of constructing a roadway on Beach Drive, north of the Military Road toward the northern limit of the park was begun. The grading of this portion of the drive, which is 2¼ miles long, was practically finished for 2 miles, and about 1 mile of the drive was partly macadamized. The stone used in constructing the base was obtained from a quarry in the park, the surface layer only being purchased.

A public convenience station was built at Pierce Mill, and the approach at the eastern end of the bridge at the mill was changed by the construction of retaining walls, thus removing a dangerous condition at this point by widening the roadway of Beach Drive. Starting this year, the policy was adopted of raising the necessary grain in the park to feed the teams used in construction work, and a considerable area was planted in corn. It is intended in the future to increase this planting so as to make the purchase of feed for the teams used in the park unnecessary.

During the next fiscal year it is proposed to continue the construction of a roadway on Beach Drive north of Military Road, and to macadamize a road along the north end of the park.

The commissioners again call attention to the need of transportation facilities to make the park more accessible to the general public. At the present time a local automobile company is operating vehicles through the Zoological Park and this park, the route covering points of interest in the park and the fare charged being reasonable. While this is a step toward furnishing such transportation facilities, it is believed that the street railway extension hereinbefore recommended on Kennedy Street, from Fourteenth Street to and into the park, should be provided by proper legislation.

ANACOSTIA RIVER AND FLATS.

In the District appropriation act for the fiscal year 1912 an appropriation of $100,000 was made toward the reclamation and development of the Anacostia River and flats, from the Anacostia Bridge to the District line, and for the fiscal year 1913 an additional appropriation of $100,000 was made to continue the work. In their estimates for the next fiscal year the commissioners have included an additional item of $100,000 for the same purpose. In connection with these improvements, which the law directs shall be expended under the supervision of the Chief of Engineers, United States Army, upon plans prepared by a board of engineers, consisting of the engineer commissioner, the officer in charge of public buildings and grounds, and the engineer officer in charge of the improvements of the Potomac River, the commissioners believe it will be necessary to acquire by condemnation all water frontage on each side of the Anacostia River, between the high-water line and the 10-foot-contour line, and also the title to any land in the river bed between high-water lines on either side, which is not now in the United States. This will be necessary in order that any filling done in connection with this improvement, and any land made, will become the property of the United States. In their estimates they have recommended legislation to accomplish this result. As the benefits which will arise from the reclamation of these flats and the making them into a public park, as recommended by the park commission, will be largely enjoyed by the territory in the section of the District through which the stream runs, the legislation as drafted provides that the cost of acquiring the shall be assessed as benefits, on an assessment area bounded by the District line on the south and east, Rhode Island Avenue on the north, and New Jersey Avenue on the west.

HARBOR FRONT.

The total amount received from rentals of wharves and river frontage in the District of Columbia, placed by law under the control of the commissioners, was $19,464, divided as follows:

Potomac River front	$17,183.00
Anacostia River front	698.25
James Creek Canal	1,582.75
Total	19,464.00

The actual water frontage of the District of Columbia devoted to commerce is about 2 miles. The total available water frontage is about 18 miles, including that set apart for parks and for purposes of the United States, which amounts to about 8 miles.

The most important frontage is that along the Washington Channel, of which 4,675 feet between the grounds of the War College and Engineer School, and the south curb line of N Street south, is under the jurisdiction of the United States and the remaining 4,600 feet is under the jurisdiction of the commissioners. Along this frontage are located the harbor police station, dock of the harbor boat, dock of the fire boat, the District morgue and the District sand and gravel wharf and yard. The lower portion of the frontage is used for river excursion traffic and steamboat traffic between Washington, Baltimore,

Norfolk, and points along the lower river, and the upper portion is used for wood and lumber yards, ice houses, and the fish and oyster wharf. The larger portion of the frontage is leased to private parties, most of which leases expire March 15, 1913. It is proposed at that time to grant new leases at increased rental.

Along this frontage is located the fish wharf, where under the law, all fish and oysters coming to the city by water, are required to be landed. This wharf was leased to W. W. Riley for a period of five years ending March 15, 1908, with the privilege or renewal for an additional five years on certain conditions. These conditions were not fulfilled and a renewal was refused the lessee and he was ordered to vacate. He instituted injunction proceedings against the Commissioners, and at this date the case has not been settled. The additional term claimed by him, however, expires March 15, 1913, and the commissioners have recommended in their estimates that on that date the fish wharf be operated as a municipal fish market and wharf under the direction of the superintendent of weights and measures. The condition of this wharf is far from sanitary, and the existing frame structures thereon are in a bad state of repair. The commissioners believe that the revenue which can be derived by the District from rentals, wharfage, and dockage fees and other charges are such that it will justify the building of modern sanitary structures for use as a fish market and that the existing wharves can be repaired so as to be used as public wharves by those shippers who have no other wharfage facilities. It is their intention to operate this market and wharf during the 16 months beginning March 15, and during that time to prepare plans for a modern fish market, which will be submitted in their estimates for the fiscal year beginning July 1, 1914.

The frontage along the Anacostia River is largely undeveloped owing to the uncertainty of ownership of abutting land and riparian rights, but legal proceedings are now being instituted under the direction of the Attorney General by which it is hoped that the question of title may be settled, and additional frontage along this river leased for commercial purposes.

The wharves along the Georgetown Channel of the river are private property except at the foot of streets. A lease has been entered into for the foot of Thirty-third Street, and for the foot of G Street. The foot of Thirtieth Street is used as a depot for the removal of street sweepings to the workhouse site at Occoquan, Va.

The portion of James Creek Canal from N to P Streets is under lease for commercial purposes.

The commissioners invite the attention of Congress to the fact that some plan of improvement should be adopted for the harbor front of the city. A plan was prepared and submitted to Congress in 1908, but no action has ever been taken thereon.

SEWERS.

The total length of sewers constructed during the year was a little over 27 miles. The total length of sewers in the District of Columbia on June 30, 1912, was 617.89 miles; of this 126.06 miles are main sewers and 491.83 miles pipe sewers. The total cost of the sewerage system to June 30, 1912, was $11,539,374.29. The total cost of the sewage disposal system to June 30, 1912 was, $4,228,555.94, making the total cost of the complete system to June 30, 1912, $15,767,930.22.

SEWERAGE PUMPING STATION.

Twenty-four billion nine hundred million gallons of sewage and 800,000,000 gallons of storm water were pumped at the sewerage pumping station during the year. The pumping plant was operated without any interruption of service, and received the sewage from practically the entire District of Columbia, delivering it to the outfall. Nine million three hundred thirty-seven thousand nine hundred and twenty pounds of coal were consumed.

A test of the condition of the river in the vicinity of the sewage outfall on the Potomac River about opposite Alexandria showed that after five years of constant discharge there is no evidence of sludge deposit. This indicates the effectiveness of the preparation of the sewage at the pumping station for discharge into the river, and also the abundant capacity of the river to efficiently dispose of the sewage by dilution.

STREAM POLLUTION.

Work was continued during the year on a study of the condition of the streams flowing into the District from the neighboring towns and villages in Maryland, as to their pollution by the discharge into them of raw sewage. The active cooperation of the Maryland State Board of Health has been secured on the work of improving the sanitation of these streams, and this board is now engaged in making a study of the Maryland area, with a view of submitting comprehensive plans for the drainage of this territory. Until the plans of the Maryland State Board of Health are formulated, specific legislation which would be required from Congress to put into effect joint drainage plans for the District of Columbia and Maryland, can not be formulated. In the meantime, however, the development of the District sewerage system has been so far advanced as to permit of receiving the Maryland sanitary drainage at the District line in Rock Creek Valley within 12 months after Congress shall pass legislation authorizing this to be done. In the Anacostia valley a considerable longer period, not less than five years, must elapse before the drainage of the State of Maryland in this valley can be cared for.

SUBURBAN SEWERS.

In the section of the District west of Rock Creek a new system of sewers was constructed in Massachusetts Avenue Heights, and extensions to existing sewers provided at Potomac Heights, University Heights, Chevy Chase, Tenleytown, Cleveland Park, Woodley, and in the areas along the Potomac above Arizona Avenue.

In the section of the District east of Rock Creek, the Piney Branch trunk sewer outlet was completed, the Petworth Valley trunk sewer built to Georgia Avenue, and deep-service sewers in connection with the new Cedar Street subway at Takoma Park were completed.

In the section of the District west of the Anacostia River, between North Capitol Street and the river, service sewers were constructed in Brookland, Langdon, and Eckington.

In the section of the District east of the Anacostia River, service sewers were constructed in Anacostia and Congress Heights.

SEWAGE-DISPOSAL SYSTEM.

Under the sewage-disposal system, the east side interceptor sewer was constructed nearly to Bunker Hill Road, and the Bunker Hill Road section about one-third completed. The second section of the Rock Creek main intercepting sewer, extending to Connecticut Avenue, was completed and contract let for the third section, extending to Adams Mill road. One thousand two hundred and eighty-nine linear feet of the Anacostia main interceptor sewer, between Poplar Point and the new Anacostia bridge was completed during the year.

WATER MAINS.

Twenty-eight miles, or 147,785 feet of water mains of all sizes were laid during the year, a decrease of 4,281 feet under the amount laid during the preceding year. The total length of water mains now in use is 550 miles.

Three hundred and two additional fire hydrants, 17 public hydrants, 3 public sanitary fountains, and 8 public horse fountains were erected, during the year, and 144 fire hydrants, 19 public hydrants, and 1 horse fountain abandoned, making the total number in service at the end of the year, as follows: Fire hydrants, 3,061; public hydrants, 215; public drinking fountains, 9; and public horse fountains, 147. There are also in service 11 shallow wells and 47 deep wells.

EXTENSION OF WATER MAINS TO SUBURBAN SECTIONS.

The most important main extension work done during the year was the completion of the lines supplying Congress Heights, Kenilworth, and intermediate points. This was done under special appropriations made by Congress in the appropriation acts for the fiscal years 1911 and 1912.

In those years appropriations aggregating $151,100 was made for extending the water service to Congress Heights and Bennings. The cost of the work was $140,335.94, or $10,764.06 under the appropriation. Ordinarily this extension would have been made from the water revenues, but as the revenues were not sufficient to justify their laying at the time they were laid, Congress advanced the money, payable one-half from the general revenues of the District of Columbia and the other half from United States funds. By legislation enacted in the District appropriation act for the fiscal year 1913, half of the amount expended is required to be repaid to the United States from the water revenues in annual installments of $20,000, commencing with the fiscal year beginning July 1, 1913. The other half, which was appropriated from the general revenues of the District, Congress did not require to be repaid from the water funds.

WATER CONSUMPTION AND WASTE.

The mean daily consumption of water was 61,990,000 gallons, which, on a basis of population of 346,000, gives a per capita rate of 179, an increase of 1 gallon per capita over the preceding year. The weather conditions were abnormal, a very dry and hot summer being succeeded by an extremely cold winter.

By means of the pitometer service for the prevention of water waste a total underground leakage was found and stopped during the year amounting to 5,115,320 gallons daily. This leakage was not as large as heretofore, and this division is performing good service in preventing water waste.

The total pumpage of water during the year was 10,107,787,000 gallons, which is 1,007,193,000 gallons more than during the previous year. The cost of operation, supplies, and repairs, including coal, was $39,126.58, making the total operative cost of pumping 1,000,000 gallons of water into the mains $3.58, as compared with $4.07 during the preceding year. This difference is due to the lower cost of coal, which was 26 cents a ton less during the year, as compared with the preceding year, and to a reduction in the cost of supplies.

WATER REVENUES AND EXPENDITURES.

The water revenues for the year amounted to $682,120.43, an increase of $48,667.73 over those of the preceding year. The expenditures for all purposes amounted to $769,530.18, leaving a nominal balance of $110,230.06 at the close of the year, as compared with a nominal balance at the close of the last fiscal year of $87,198.64. This increase is due, in part, to advances made by Congress for the extension of water mains to Congress Heights, Kenilworth, and intermediate points, which advances are required to be repaid to the United States from the water funds. The nominal balance existing at the end of each year serves as a working fund in order to carry on work authorized by Congress at the beginning of the fiscal year in advance of water revenues due during the year. The necessity of such a working fund is apparent, and it also provides an insurance fund which is immediately available in case of a serious emergency, such as an accident, which might easily endanger the entire water system. The ordinary nominal balance is created by the postponement of certain necessary work of replacement in the water-distribution system.

Water is furnished free to orphan asylums, hospitals, schools, and charitable institutions under authority of law to the extent of 24,695,206 gallons. This is based on a per capita allowance of from 60 to 100 gallons per day, dependent on the character of the institution. All water in excess of that allowed is charged for at meter rates. This excess of allowance amounted to 3,277,933 gallons.

WATER METERS.

Five thousand and thirty-six water meters were installed during the year and 66 discontinued, making the total number now in use 23,912. The number of water services is 66,159, and the percentage of services metered, 36. The average cost of installing water meters by the District of Columbia in private residences during the year was $11.36, including the cost of the meter, which was $5.35. The average cost of the repair of meters was 31 cents and of reading, 25 cents. The rate charged for water on metered service during the year was 3 cents per 100 cubic feet, with a minimum rate to all consumers of $4.50 per annum. The average annual payment for private residences where meters were installed by the District of Columbia was

$5.38. Water-rent bills are delivered to the householders annually at the minimum rate of $4.50 per annum, which allows the use of 15,000 cubic feet, or 112,000 gallons, and if on actual measurement the water is found to have been used in excess of this rate a bill is rendered for the excess.

On the water services which are not metered water for domestic purposes is charged for according to stories and frontage. For premises of two stories, with a front width of 16 feet or less, the minimum rate is $4.50 per annum; for each additional front foot or fraction thereof 30 cents is charged. For each additional story one-third of the charges as computed above is added. For business premises not metered rates vary from $1 to $25 per annum. Where the rate is $25 or over a meter is required to be installed at the expense of the consumer.

INCREASE IN WATER RATES.

In order to provide for the installation of meters in private residences so as to complete the work within six years from July 1, 1912, as well as to provide for necessary extensions and renewals in the water service, the commissioners increased the water rates on unmetered premises to take effect July 1, 1912, from a minimum rate of $4.50 per annum to a minimum rate of $5 per annum, based on a premises two stories high with a front width of 16 feet or less, and for each additional front foot or fraction thereof greater than one-half, from 30 to 31 cents, and for each additional story or fraction thereof, one-third of the charges as computed above. An increase was also made in the metered premises from 3 cents per 100 cubic feet to 4 cents per 100 cubic feet, or from 4 cents per 1,000 gallons to 5.35 cents per 1,000 gallons. The minimum charge for water on metered premises was left at $4.50, but the amount of water to be used under this minimum rate was reduced from 15,000 cubic feet, or 112,200 gallons, to 7,500 cubic feet, or 56,100 gallons. All water used in metered premises in excess of this allowance is charged for at the new rate of 4 cents per 100 cubic feet, or 5.35 cents per 1,000 gallons. A contract has been made for the purchase of 10,000 meters, which will be installed during the current fiscal year, and it is proposed to continue the installation at the same rate until all unmetered services in private residences are metered, which is estimated to be done in six years.

By conserving the use of water, which conservation is brought about by the use of water meters, the necessity for increasing the water supply by the construction of an additional aqueduct, estimated to cost about $5,000,000, may be postponed for an indefinite number of years.

TRANSFER OF WASHINGTON AQUEDUCT.

In the interest of economy of operation, and to provide for unity of control, the commissioners recommend that the Washington Aqueduct, the filtration plant, and all appurtenances connected with them, be transferred from the War Department to the commissioners. At present there is a divided jurisdiction. The Chief of Engineers, under the direction of the Secretary of War, has control over the Washington Aqueduct, the filtration plant, the Conduit

Road, under the which the aqueduct passes, and a portion of the water mains laid under the streets of the city of Washington. The commissioners have jurisdiction over the District pumping station and all distribution mains laid in the District of Columbia. Under existing arrangements the water is taken from Great Falls on the Potomac, collected in reservoirs, brought to the city of Washington by an aqueduct, and thence delivered by an aqueduct to the filtration plant, where it is filtered and delivered to the pumping station of the District of Columbia, adjacent to the filtration plant. From this point all the water is distributed through distributing mains laid by the District of Columbia under the streets of the District, and all extensions to this water-main system are made under the direction of the commissioners. When water was first delivered to the city it was intended only for the use of the Government buildings, but by law this use was permitted to the residents of the city of Washington, and the privilege later extended over the entire District of Columbia. There exists a number of water mains laid under the streets of the old city which still remain under the jurisdiction of the War Department, the later mains being laid under the jurisdiction of the commissioners. Water passes from one set of mains to the other, the mains are often laid side by side, and when leaks or other accidents occur it is difficult to determine whether the leak is in a main under the jurisdiction of the War Department or one under the jurisdiction of the commissioners. At the pumping station of the filtration plant, under the jurisdiction of the War Department, there is a chief engineer and an operating force, and at the District pumping station, under the jurisdiction of the commissioners, there is another chief engineer and operating force. At the District pumping station it is necessary to maintain blacksmith and woodworking shops, electrical shops, and repair shops, and it is also necessary to maintain the men, material, and supplies to care for, maintain, and repair the water-distribution system. Similar facilities must also be maintained at the Washington Aqueduct and filtration plant under the War Department. It has seemed to the commissioners that economy in operation and unity of control could be accomplished by placing the entire water supply and distribution system under the jurisdiction of the commissioners. One chief engineer could run both pumping plants; the number of employees engaged in similar services at each plant could be reduced, and duplication of repair and maintenance of the two systems separately could be done away with, and other economies effected.

The transfer has been recommended on several occasions by Chiefs of Engineers of the United States Army, and by various boards of commissioners. The commissioners hope that the necessary legislation to accomplish this transfer may be enacted in the next fiscal year.

Very respectfully,

CUNO H. RUDOLPH,
JOHN A. JOHNSTON,
WILLIAM V. JUDSON,
Commissioners of the District of Columbia.

REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT.

SURFACE DIVISION.

Capt. MARK BROOKE,

Corps of Engineers, U. S. Army, Assistant to the Engineer Commissioner, in charge.

HIGHWAYS (STREETS, ROADS, BRIDGES, ETC.)	C. B. HUNT, *Engineer of Highways.*
Sidewalks and alleys	H. N. MOSS, *Superintendent of Streets.*
Construction and maintenance of suburban roads	L. R. GRABILL, *Superintendent of Suburban Roads.*
Construction and care of bridges	T. C. J. BAILY, JR., *Engineer of Bridges.*
STREET AND ALLEY CLEANING, COLLECTION OF GARBAGE, ETC.	J. W. PAXTON, *Superintendent of Street Cleaning.*
ASPHALTS AND CEMENTS	J. O. HARGROVE, *Inspector of Asphalts and Cements.*
SURVEYOR'S OFFICE (including street extensions)	M. C. HAZEN, *Surveyor, District of Columbia.*
TREES AND PARKINGS	TRUEMAN LANHAM, *Superintendent of Trees and Parkings.*

REPORT OF THE ASSISTANT IN CHARGE.

OFFICE OF THE ENGINEER COMMISSIONER
OF THE DISTRICT OF COLUMBIA,
Washington, October 7, 1912.

COLONEL: I have the honor to transmit herewith annual reports, giving in detail the operations during the fiscal year ended June 30, 1912, of the surface division, the surveyor's office, including the office of street extensions, the office of the inspector of asphalts and cements, the office of superintendent of trees and parkings, and the superintendent of street cleaning. In the report of the Engineer of Highways are included the reports of the superintendent of streets, the superintendent of suburban roads, and the engineer of bridges.

Very respectfully,

MARK BROOKE,
Captain, Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner.

Lieut. Col. WM. V. JUDSON,
Corps of Engineers, U. S. Army,
Engineer Commissioner, District of Columbia.

REPORT OF THE ENGINEER OF HIGHWAYS.

WASHINGTON, D. C., *September 20, 1912.*

SIR: I have the honor to submit the following report of the operations of the office of the engineer of highways for the fiscal year ended June 30, 1912:

The total amount of funds appropriated by Congress and deposited by corporations and others for disbursement by the surface division aggregated $1,322,750, of which about $215,000 was for paving sidewalks and alleys in all parts of the District; $579,050 was for paving new roadways and repairing old roadway pavements; $228,100 for construction and repair of suburban roads, including the Quarry Road entrance to the Zoological Park; $121,600 for construction and repair of bridges; $15,000 for grading streets and avenues; $12,000 for sidewalks and curbs around Government reservations and parks; and about $152,000 was spent in repairing pavements disturbed by other branches of the District government, and by various corporations, and others.

Summary of work under appropriation for "Improvement and repairs" fiscal year ended June 30, 1912.

Character of work.	Streets and avenues.	County roads and suburban streets.	Repairs to asphalt pavements.	Elimination of grade crossings.	Total.
Street asphalt paving.....square yards..	18,111.96	2,954.75	81,144.91	2,942.94	105,154.56
Asphalt surface.....do....	.....	.....	[1]102,625.44	.....	102,625.44
Vitrified-block gutters.....do....	1,886.37	3,412.00	9,587.35	275.54	15,161.26
Cement gutters.....linear feet..	.....	9,573.00	.....	.....	9,573.00
Asphalt-block paving.....square yards..	12,678.81	.....	.....	.....	12,678.81
Macadam.....do....	.....	41,625.00	.....	.....	41,625.00
Cobble and granite gutters.....do....	.....	5,563.90	.....	.....	5,563.90
Ordinary grading.....cubic yards..	4,959.44	50,580.00	1,754.00	590.00	57,883.44
Macadam grading.....do....	816.00	.....	.....	.....	816.00
Old asphalt removed.....do....	.....	.....	13,913.91	.....	13,913.91
Old cobble and granite removed, square yards.....	12,863.00	4,806.02	.....	2,429.00	20,098.02
Old curb removed.....linear feet..	7,861.62	.....	25,836.56	.....	33,698.18
Curb set (granite and blue stone)...do....	10,051.16	14,828.10	27,772.73	1,338.59	53,990.58
Cement curb set:.....do....	.....	9,575.37	.....	.....	9,575.37
Curb reset.....do....	7,066.70	3,225.02	16,554.35	424.08	27,270.15
Bituminous macadam paving, square yards.....	7,288.39	10,711.26	.....	.....	17,999.65
Cement roadway.....do....	.....	2,124.02	.....	.....	2,124.02

Cement walk laid under "Assessment and permit work".....square yards..	58,566.60
Asphalt block (alley pavement) laid under "Assessment and permit work".....do....	7,094.50
Vitrified block (alley pavement) laid under "Assessment and permit work".....do....	39,318.98
Cement walk laid under "Sidewalks and curbs".....do....	7,494.48

[1] Includes 52,639 square yards of resurfacing by heater method.

The following is a list of tables appended to the report:

Table A.—Street railways in the District of Columbia, July 1, 1912.

Tables B and C.—Statement of character and extent of street pavements.

Table E.—Schedules of work on streets and avenues and county roads, and suburban streets.

Table F.—Repairs to asphalt and coal-tar pavements.

Table G.—Work done for street railway companies.

Table H.—Work done by day labor under appropriation for "Repairs to streets, avenues, and alleys."

Table I.—Regular permit work.

Table K.—Assessment work.

Table L.—Replacing and repairing sidewalks and curbs around public reservations.

Table M.—Miscellaneous work.

Table O.—Repairs to cuts by plumbers and others.

Table P.—Grading streets, alleys, and roads.

The types of roadway pavements laid in streets newly paved were the same as in past years, sheet asphalt, asphalt block, and a limited amount of bituminous macadam. About $150,000 was spent on this class of work, the specifications of which are appended. The prices paid were: For sheet asphalt $1.77 per square yard; for asphalt block $1.76 per square yard; and for bituminous macadam, on 6-inch concrete base $1.67 per square yard, and on broken stone base 99 cents per square yard. The old granite block pavement on E Street northwest from Eleventh to Thirteenth Streets was replaced with sheet asphalt under a special provision of funds for this work. The repairing of asphalt roadway pavements by the heater method was continued, about 53,000 square yards being thus treated during the year. About 46,500 square yards of new alley pavements were laid at the half cost of the abutting property, 85 per cent of which were of vitrified and 15 per cent of asphalt blocks, both paved on gravel base.

The project for the building of a bridge over Rock Creek at Q Street included the condemnation of the street areas leading to the structure and the necessary court proceedings to accomplish this has confined the constructive operations to the preparation of plans and specifications for the work which are now quite well elaborated.

Identical circumstances largely influenced the opening of the new entrance into the Zoological Park from the intersection of Sixteenth Street and Columbia Road, although in this case contracts for the grading of the streets and for their surface improvements were entered into during the last days of the fiscal year, the condemnation proceedings having been completed in time for this to be done.

Legal procedure in condemnation of land also delayed in a marked degree the building of the Cedar Street subway, but a contract for the physical construction was executed October 23, 1911.

Little remains to be done under the general project for the elimination of grade crossings; two streets, First Street east from G Street to H Street and Massachusetts Avenue from North Capitol Street to New Jersey Avenue were paved during the year and the entire completion of the project should occur during the ensuing year.

About 66,000 square yards of cement sidewalks were laid under the same specifications as in recent years, this type of work being in effect the one exclusively used, its qualities and economy easily giving it preference. The prices paid were 96 cents per square yard for urban and $1.20 per square yard for suburban work.

Two new types of pavement were used during the year's operations. They were 2-inch asphalt block on a concrete base which was laid on Maine Avenue between Third and Four-and-a-half Streets, the contract price of which was $1.65 per square yard, and a 6-inch concrete roadway construction coated with about one-fourth inch wearing skin of bitumen laid on Michigan Avenue between First Street east and the reservoir, and good results are anticipated from these constructions.

I renew my recommendation of past years for the progressive removal of all grade crossings in the District, and authority should be given especially for the removal of the grade crossing at Bennings as soon as possible.

I transmit herewith the report of the superintendent of suburban roads, the superintendent of streets, and the engineer of bridges.

Very respectfully.

C. B. HUNT.
Engineer of Highways.

Capt. MARK BROOKE,
Corps of Engineers, U. S. Army,
Assistant to Engineer Commissioner, D. C.

STATEMENT OF PER DIEM EMPLOYEES.

Statement showing number of employees temporarily required in connection with street, road, and bridge construction and repairs, and appropriations and deposits from which paid, during the fiscal year ended June 30, 1912.

Designation.	Number.	Rate.
Assistant engineers	1	$5.
Computers	1	$4.50.
Draftsmen	2	1 at $3.75 and 1 at $3.50.
Transitmen	2	1 at $4 and 1 at $3.
Inspectors	15	1 at $8, 1 at $5, 11 at $4, 1 at $3, and 1 at $2.
Copyists	4	1 at $4, 2 at $3.25, and 1 at $2.50.

Appropriations from which paid.

Improvements and repairs, District of Columbia	$15,386.82
Elimination of grade crossings	2,468.12
Cedar Street Subway	801.00
Construction of county roads and suburban streets	1,084.50
Q Street Bridge across Rock Creek, District of Columbia	1,791.50
Calvert Street Bridge	96.00
Total	21,627.94

REPORT OF THE SUPERINTENDENT OF STREETS.

WASHINGTON, D. C., *September 16, 1912.*

SIR: I have the honor to submit herewith the annual report of the operations under my charge for the fiscal year ended June 30, 1912.

Table H is a summary of work done by day labor under the appropriation for "Current repairs to streets, avenues, and alleys." The cost of such work was $53,211.17, including the repairs to 3,700 dangerous holes. One-third of this amount was sidewalk and alley work, and the other two-thirds repairs to street roadways.

Table I is a list of work done under the permit system, wherein property owners requested the improvement and paid one-half the cost, the District paying the other half. The cost of this work was $35,632.07.

Table K is a list of work done under the assessment system. One-half the cost of such work is charged against the abutting property. The total cost was $164,065.88.

Table L is a list of work paid for from the appropriation for "Replacing sidewalks and curbs around public reservations." The amount expended under this class of of work was $7,933.

Very respectfully,

H. N. Moss,
Superintendent of Streets, District of Columbia.

The Engineer of Highways.

REPORT OF THE SUPERINTENDENT OF SUBURBAN ROADS.

Washington, D. C., *September 16, 1912.*

Sir: I have the honor to submit herewith the report of the operations of the county road division, during the fiscal year ended June 30, 1912.

Repairs to county roads, appropriation 1912.

Job No.	Location.	Cost.
	Sec. 1.—*Potomac River to Rock Creek.*	
4028	University Park (repair)	$246.19
4048	Woodley Road NW., between Thirty-third Place and Wisconsin Avenue (resurface)	4,398.39
4057	Massachusetts Avenue NW., between California and Wisconsin Avenues (oil)	911.92
4065	Canal Road, between Baltimore & Ohio R. R. & Chain Bridge (repairs)	3,372.16
4067	River Road NW., between Wisconsin Avenue and Davenport Street (repair)	1,866.53
4088	Joliet Street and Arizona Avenue (build fence)	50.06
4089	Ridge and New Cut Road (repair)	163.00
4101	Connecticut Avenue, between Reno Road and Livingston Street (lay pipe)	894.17
4125	Idaho Avenue NW., north of Woodley Road (surface)	224.31
4169	Thirtieth Street, north of Albemarle Street (repair)	311.12
4191	Grant Road, from Connecticut to Wisconsin Avenues (repair)	369.97
4100	Hall Place and east half of W Place (surface)	1,327.93
4161	Gordons Subdivision, Chevy Chase (repair)	286.69
4262	Connecticut Avenue, from Cathedral Avenue to Chevy Chase Circle (repair)	834.65
4273	Wisconsin Avenue, from Thirty-seventh to Fessenden Streets (repair)	726.89
4278	Connecticut Avenue, Western Avenue, Belt Road, and Wisconsin Avenue, between Harrison and Woodley Road (oil)	288.50
4294	Rittenhouse Street, west of Broad Branch Road (repair)	223.84
4236	Wisconsin Avenue, south of Woodley Road, Woodley Road, Newark Street, Canal Road, Foxall Road, Massachusetts Avenue, Jewitt Street, and Nebraska Avenue (liquid asphalt)	1,214.47
4000	Sprinkling roads	126.00
4234	Connecticut Avenue, Western Avenue, Belt Road, Wisconsin Avenue, between Harrison and Woodley Road and Rittenhouse Street (liquid asphalt)	1,335.81
		19,172.60
	Dangerous holes and minor repairs	7,823.41
		26,996.01
	Sec. 2.—*Rock Creek to North Capitol Street and Riggs Road.*	
4001	Spring Road, between Holmead and Thirteenth Streets (repair)	337.06
4002	Hobart Place, east of Georgia Avenue (repair)	171.68
4003	Kenyon Street NW. between Sixth Street and Soldiers' Home (repair)	187.87
4004	Ninth Street, between Florida Avenue and Barry Place (repair)	104.69
4005	Fourteenth Street NW., Park Road to Spring Road (stone and tarvia)	1,964.75
4018	Randolph Place NW., between First and Second Streets (cobble gutters)	567.25
4021	Military Road, from Piney Branch Road to Georgia Avenue (grade and regulate)	316.37
4023	Thirteenth Street NW., between Otis Street and Spring Road (repair)	43.25
4025	Sixteenth Street NW., between Columbia Road and Oak Street (tarvia)	1,786.60
4026	Various streets (roads) (oiling)	3,432.08
4027	Kalorama Road, from Sixteenth Street to Champlain Avenue (repair)	269.44
4039	Newton Street NW., between Seventeenth and Eighteenth Streets (repair)	97.91
4041	Princeton Place, from New Hampshire Avenue to Spring Road (grade)	86.82
4042	Thirteenth Street NW., north of Florida Avenue (repair)	104.50
4044	Adams Mill Road, from Quarry Road to Zoo Park (repair)	486.99
4049	Ashmead Place (repair)	278.75
4056	Warder Street NW., from Newton to Otis Streets (repair)	89.57
4058	Rosemont Avenue, corner Klingle Road (surface)	319.50
4063	Fourteenth Street NW., Spring Road to Kennedy Street (tarvia)	934.00
4078	Shepherd Street NW., between Georgia Avenue and Thirteenth Street (surface)	625.30
4079	Twentieth Street NW., between Biltmore & Belmont Streets (repair)	247.63
4087	Fuller Street NW., between Columbia Road and Sixteenth Street (macadam)	201.25
4096	Calcium chloride and hauling	996.34
4097	Spring Road, between Holmead Place and Fourteenth Street (repair)	234.63
4099	Kalorama Road, between Twenty-third Street and end of pavement, and Twenty-third, between Wyoming Avenue and Kalaroma Road (surface)	364.88

Repairs to county roads, appropriation 1912—Continued.

Job No.	Location.	Cost.
	SEC. 2.—*Rock Creek to North Capitol Street and Riggs Road*—Continued.	
4108	Sixteenth Street, between Argyle Mill Road and Kennedy Street (tarvia)	$243.65
4111	Rock Creek Church Road, south of Spring Road (repair)	443.18
4112	Eastern Avenue, intersecting Laurel Avenue (gravel)	34.25
4123	Blair Road, from R. C. C. Road to Takoma Park (gravel)	280.88
4124	Upshur Street NW., between Seventh and Eighth Streets (repair)	94.6
4127	Decatur Street NW., west of Sixteenth Street (surface, old material)	90.75
4128	Riggs Road, from Blair Road to District of Columbia line (gravel)	202.75
4129	Rock Creek Church Road, from Harewood Road north (gravel)	293.50
4130	Lamont Street NW., between Sixth and Warder Streets (repair)	90.13
4135	Second Street NW., between Elm and Bryant Streets (stone and tarvia)	262.10
4144	Cedar Street Subway (hauling pipe)	35.25
4145	Irving Street NW., between Georgia Avenue and Warder Street (repair)	114.50
4146	Kenyon Street, between Eighteenth and Nineteenth Streets, and Nineteenth Street, between Kenyon and Kilbourne Streets (repairs)	99.13
4147	Quebec Place, between Georgia Avenue and Warder Street (repair)	55.56
4150	Buchanan Street, west of Fourteenth Street (surface, old material)	127.75
4151	Allison Street NW., west of Fourteenth Street (surface, old material)	173.69
4158	Thirteenth Street NW., north of Madison Street (repair)	154.25
4173	Approaches to Connecticut Avenue Bridge (tarvia)	200.25
4181	Quincy Street NW., between Fifth and Seventh Streets (repair)	156.62
4263	Connecticut Avenue Bridge (stone and tarvia)	441.59
4293	Seventeenth Street NW., between Kalorama Road and Crescent Street (repair)	208.25
4114	Streets in Takoma Park (repair)	375.81
4229	Perry Place, west of Fourteenth Street (grade and surface)	82.00
4086	Streets in Petworth (repair)	135.00
4264	Sixteenth Street NW., north of Piney Branch Bridge (regulate)	150.25
4305	Georgia Avenue, adjacent to Walter Reed Hospital (change gutter trap)	9.35
4066	Sherman Avenue, between Barry Place and Lamont Avenue (repair)	249.31
4069	Georgia Avenue NW., between Park Road and Buchanan Street (repair)	637.44
4260	Eleventh Street NW., between Florida Avenue and Monroe Street (repair)	253.55
4266	Fourteenth Street NW., Park Road to Shepherd Street (repair)	174.77
4280	Fourteenth Street NW., Shepherd to Kennedy Streets (repair)	157.25
4284	Sixteenth Street, north of Oak Street (tarvia)	147.25
4292	Hauling and sprinkling calcium chloride	21.75
4000	Sprinkling roads	1,573.00
4231	Military Road, Blagden Avenue and Sixteenth Street NW., between Columbia Road and Kennedy Street (tarvia B)	1,345.64
4232	Sixteenth and Kennedy Streets to Longfellow Street, and Longfellow Street, between Sixteenth Street and Colorado Avenue (liquid asphalt)	52.75
4335	Georgia Avenue, Cedar and Carroll Streets, New Hampshire Avenue, Rittenhouse, Longfellow, Ninth, and Ingraham Streets (oil)	1,688.15
		25,105.04
	Dangerous holes and minor repairs	9,169.41
		34,274.45
	SEC. 3.—*North Capitol Street to Eastern Branch.*	
4017	Levis Street NE., between Fifteenth Street and Bladensburg Road (repair)	251.38
4024	Douglas Street NE., between Twenty-second Street and Queens Chapel Road (gravel)	62.00
4037	Rhode Island Avenue NE., between Lincoln Road and Summit Place (repair)	308.60
4043	Brentwood Road, south of Montana Avenue (repair)	226.50
4045	Twenty-second Street NE., north of Lawrence Street (gutters)	134.87
4062	Brentwood Road, between Rhode Island Avenue and Monroe Street (repair)	251.94
4076	Bladensburg Road (repair)	3,515.77
4077	Bladensburg Road, end asphalt pavement to District of Columbia line (oil)	161.57
4098	Harewood Road (gravel)	141.37
4110	Fourth Street NE., north of Rhode Island Avenue (repair)	108.74
4113	West side Trinidad Avenue, north of Morse Street (gutters)	156.50
4149	Various streets (adjust plumbing)	48.75
4189	Bennings Road (repair)	72.25
4012	Streets in Brookland (repair)	723.62
4013	Streets in Ivy City (repair)	84.25
4014	Streets in Langdon (repair)	214.00
4015	Michigan Avenue, between North Capitol and Twentieth Streets (repair)	1,870.17
4019	Harewood Road (repair)	106.50
4109	Sargeant Road (repair)	20.75
4227	Fourth Street NE., from W Street to Rhode Island Avenue, and north side of Rhode Island Avenue, between Fourth and Fifth Streets (repair)	146.25
4248	Bladensburg Road, at intersection of Queens Chapel Road (repair)	349.25
4253	Lincoln Road, between R Street and Michigan Avenue (repair)	250.75
4016	Rhode Island Avenue, from Fourth to Twentieth Streets (repair)	531.66
4064	North Capitol Street, from V Street to Michigan Avenue (repair)	173.04
4228	Various streets in northeastern section (oil)	1,839.04
4000	Sprinkling roads	1,275.75
		12,025.27
	Dangerous holes and minor repairs	4,749.58
		16,774.85

Repairs to county roads, appropriation 1912—Continued.

LOCATION.

Job No.	Location.	Cost.
	SEC. 4.—*East and south of the Eastern Branch.*	
4020	Pennsylvania Avenue SE., between Minnesota Avenue and Benning Bridge (gravel)	$239.65
4047	T Street SE., between Naylor Road and Twenty-fourth Place (gravel)	144.67
4171	West side Nichols Avenue SE., between Howard Road and culvert (grade)	275.93
4170	Grand Avenue and City View Street (regulate)	73.81
4251	Anacostia Road, north of Benning Road (repair)	76.84
4172	Nichols Avenue SE., between Sheridan and Alabama Avenues (repair)	2,674.87
4237	Bennings Road, Kenilworth Avenue, and Sheriff Road (oil)	614.52
4239	Good Hope Road and Nichols Avenue (oil)	697.03
4000	Sprinkling roads	710.12
		5,507.44
	Dangerous holes and minor repairs	7,829.85
		13,337.29

RECAPITULATION.

Section 1	$26,996.01
Section 2	34,274.45
Section 3	16,774.85
Section 4	13,337.29
	91,382.60
Steam fittings	222.79
Lumber	182.88
Tarvia B	528.00
Liquid asphalt	2,524.91
Texas road oil	484.24
Emulsified oil	2,741.22
Tarvia A	491.71
Cottonseed soap	331.25
Calcium chloride	775.78
Kerosene oil	73.50
Asphalt binder C (drums)	431.86
Oil and tar distributor	1,050.00
Road oil No. 4	1,339.60
Sweeping machines (2)	100.00
Tools	461.46
Repairing steam rollers	920.36
Axle grease	21.45
Soda ash	35.50
Cobble and gravel	661.08
Sand-spreading machine	350.00
Heating kettles and tanks	670.00
Steam pump	69.60
Hardware	57.42
Furnishing and applying road oil	1,326.06
Tank	93.50
Tarvia X	1,262.40
Car tickets	20.00
Erecting storage tanks	1,049.52
Repairing oil tanks	56.08
Maintenance automobiles	690.74
Blacksmithing	225.35
Limestone and screenings	634.92
Repairing tar kettles	56.55
Repairing road scraper	64.20
Pipe	36.95
Removing cobble	134.81
Traveling expenses	237.93
Demurrage	66.00
Laying pipe on Cedar Street	1,101.31
Adjusting fire hydrants	76.21
Catch basins	151.09
Painting auto car	63.13
Side track	585.10
Hire steam roller	250.00
Pouring pots	26.00
Fittings for oil tank	333.17
Road oil, 30 per cent asphalt	301.80
Repairing water wagon	101.61
Cotton waste	23.47
Repairing steam boiler	201.00
Hauling stone and screenings	4,114.52
Miscellaneous	635.80
Total	119,826.43
Balance	173.57
Appropriation	120,000.00

The largest items of repair work during the year have been as follows:

Woodley Road, between Thirty-third Place and Wisconsin Avenue, resurfaced with bituminous macadam	$4,398.39
Canal Road, between Baltimore & Ohio R. R. crossing and Chain Bridge, bituminous macadam	3,372.16
River Road NW., Wisconsin Avenue to Davenport Street, water-bound macadam	1,866.53
Fourteenth Street NW., Park Road to Spring Road, bituminous macadam	1,964.75
Sixteenth Street NW., Columbia Road to Oak Street, surface treatment	1,786.60
Bladensburg Road, water-bound macadam, repairs	3,865.02
Michigan Avenue NE., North Capitol to Twentieth Streets, water-bound macadam	1,370.17
Nichols Avenue SE., between Sheridan and Alabama Avenues, water-bound macadam (repair due to additional street car track)	2,674.87

In addition to these items, the amount of approximately $15,000 was expended during the year for oiling and tarring roads; and the amount of $3,684.87 was expended for water sprinkling on roads which it was not practicable to oil and which required sprinkling as a means of maintenance.

The use of bituminous macadam and bituminous concrete in the construction of new streets and the repair of old roadways was the principal feature of the year's work. One concrete roadway with a cover of bitumen was constructed.

Bituminous macadam, by penetration method, was used on the following new construction, viz:

	Bituminous material used.
Butternut Street, Georgia Avenue to Fifth Street	Standard Asphalt C.
Fifth Street, Butternut to Cedar Streets	Do.
Seventeenth Street, NE., Rosedale Street to Benning Road	Do.
Keefer Place, Georgia Avenue to Sixth Street	Do.
Lamont Street, Georgia Avenue to Sixth Street	Do.
Sixth Street, Keefer to Lamont Streets	Do.
Macomb Street, Thirty-sixth Street to Wisconsin Avenue	Tarvia X.
Rock Creek Church Road, Georgia Avenue to Fifth Street	Sarco.

The same method was used on the following repair work during the year:

	Bituminous material used.
Woodley Road NW., between Thirty-third Place and Thirty-fifth Street	Standard asphalt C.
Woodley Road NE., between Thirty-fifth Street and Wisconsin Avenue	Tarvia X.
Canal Road, between Baltimore & Ohio R. R. crossing and west end of stone wall along the canal.	Bermudez road asphalt.
Canal Road, between west end of stone wall along the canal and Chain Bridge	Texaco.
Fourteenth Street NW., Park Road to Spring Road on east side, and Park Road to Meridian Street on west side.	Tarvia X.

The bituminous macadam was all two-coat work, using 2 gallons of bituminous material per square yard, at a cost varying from 18 cents to 25 cents per square yard above that of ordinary macadam.

Bituminous concrete (mixing method) was used in the construction of the following roadways: Mount Pleasant Street NW., Sixteenth Street to Park Road; Twenty-third Street NW., north of Calvert Street; Fourteenth Street SE., Good Hope Road to V Street.

This work was done by contract and the materials were mixed at an asphalt plant. The cost was $0.98 per square yard for a 2-inch layer of bituminous concrete rolled in place.

Michigan Avenue NE., west of First Street, was improved with a concrete base which was then covered with a coating of asphaltic oil on one part and with a coating of tar on another part. The cost of this work, for a 6-inch concrete base with a thin bituminous covering, was about $0.80 per square yard.

The use of road oils and various surface treatments was continued; the same method being used as far as practicable for the successive applications to the same roadway,

in order to determine the comparative wearing values of the materials. New streets not having heavy travel were constructed of water-bound macadam, and will receive surface treatment when sufficiently compacted. The cost of surface treatments was very much reduced and the effect made better by the use of improved machinery, which enables a smaller amount of oil to be used. The cost of treatments with oil or tarvia B, including cleaning and sand covering, varied from 1½ to 3 cents per square yard of surface treated.

The roadways so far constructed of bituminous macadam are as follows:

	Miles.
Tar filler used:	
Connecticut Avenue Bridge	0.254
Sixteenth Street Bridge	.052
Meridian Street, Fourteenth Street to alley	.076
Second Street NW., V to Bryant Streets	.246
Fourteenth Street, Park to Spring Roads, east side	.455
Fourteenth Street, Park Road to Meridian Street, west side	.237
Otis Street, Fourteenth to Thirteenth Streets	.153
Quincy Street, Fifth to Seventh Streets	.123
Woodley Road, Thirty-fifth Street to Wisconsin Avenue	.212
Entrance to Rock Creek Park at Kennedy Street	.066
	1.874
Asphaltic filler used:	
Wisconsin Avenue, Harrison Street to District line	.289
Benning Road, end of asphalt to bridge	.422
Woodley Road, Thirty-third to Thirty-fifth Streets	.184
Canal Road, railroad bridge to Chain Bridge	.451
Colorado Avenue, Kennedy Street to A Road	.242
Rock Creek Church Road, Georgia Avenue to Fifth Street	.285
Keefer Street, Georgia Avenue to Sixth Street	.108
Lamont Street, Georgia Avenue to Sixth Street	.108
Sixth Street, Lamont to Keefer Streets	.045
Butternut Street, Georgia Avenue to Fifth Street (both sides)	.746
Fifth Street, Butternut to Cedar Streets	.075
	2,955

Total, 4.829 miles.

It is recommended that some of the most heavily traveled macadam roads leading out of the city and in the built-up sections adjacent to the city limits, on which the work of continual repair has become expensive and burdensome, be resurfaced as fast as practicable with bituminous concrete, this or a similar material being necessary to withstand the traffic. Such treatment is suggested for Connecticut Avenue between Cathedral Avenue and Chevy Chase and for Eleventh Street NW. north of Florida Avenue. Sherman Avenue, the principal route for hauling from the city to the northern section, should be paved as rapidly as possible with granite block or other equally durable pavement.

Respectfully submitted.

L. R. GRABILL,
Superintendent of Suburban Roads.

REPORT OF THE ENGINEER OF BRIDGES.

WASHINGTON, D. C., *September 1, 1912.*

SIR: I have the honor to submit the following report of the operations under my charge for the fiscal year ended June 30, 1912:

The expenditures under the construction and repair of bridges are as follows:

Bridge No.	Character of work.	Cost.
54	Rebuilding fences on east approach	$62.67
30	Minor repairs	192.40
35	Paint	299.03
307	Build bridge, Fifty-third and Eads Streets NE	126.13
30	Paint	1,654.61
30	Refloor	5,732.55
40	do	280.52
7	Replace planking and joists	5,307.61
34	Minor repairs	61.38
34	Place ties, east and west approaches	174.96
55	Paint	789.25
	Dangerous holes and minor repairs:	
	July 1 to 15, 1911	16.68
	July 16 to 31, 1911	23.95
	Aug. 1 to 15, 1911	2.00
	Aug. 16 to 31, 1911	110.10
	Sept. 1 to 15, 1911	89.57
	Sept. 16 to 30, 1911	14.75
	Oct. 1 to 15, 1911	2.93
	Oct. 16 to 31, 1911	8.00
	Nov. 1 to 15, 1911	1.67
	Nov. 16 to 30, 1911	19.94
	Dec. 1 to 15, 1911	6.00
	Dec. 16 to 31, 1911	47.57
	Jan. 1 to 15, 1912	16.20
	Jan. 16 to 31, 1912	9.57
	Feb. 1 to 15, 1912	2.60
	Feb. 16 to 29, 1912	71.56
	Mar. 1 to 15, 1912	.....
	Mar. 16 to 31, 1912	58.88
	Apr. 1 to 15, 1912	60.00
	Apr. 16 to 30, 1912	87.05
	May 1 to 15, 1912	107.20
	May 16 to 31, 1912	118.10
	June 1 to 15, 1912	93.98
	June 16 to 30, 1912	25.05
	Building concrete steps north side of bridge 30, Calvert Street NW	118.07
	Car tickets	50.00
	Coal, Aqueduct Bridge office	24.99
	Office supplies	25.00
	Photograph work	67.68
	Forage	95.91
	Livery (inspector's horse)	240.00
	Tools	34.90
	Salaries, engineer of bridges' office	485.54
	Total expended	16,806.55
	Appropriation "Construction and repair bridges, 1912"	16,000.00
	Repayments:	
	1912—Capital Traction, half cost No. 30	817.08
	1912—Washington Railway & Electric Co., half cost No. 34	203.78
	1912—Salary repayments	2.25
	Total amount available	17,023.11
	Amount expended to date	16,806.55
	Balance	216.56
	Total	17,023.11

Attention is again called to the conditions at the north end of the Connecticut Avenue Bridge, where, on account of insufficiency of public-land ownership, the encroachment of private residences is seriously marring the beauty of this structure.

The work of stiffening and strengthening bridge No. 30 (Calvert Street, over Rock Creek), plans for which were prepared in this office and a contract entered into with the Penn Bridge Co. for $19,789.24, was completed August 24, 1911, the work consisting in replacing the lateral tower rods and truss sway bracing by stiff members and in replacing the inverted A frames over the towers by plate girders. This work not only rendered the bridge much safer, but reduced the vibrations to a marked degree. This bridge was built for the Rock Creek Railway Co. in 1891 by the Edgemoor Bridge Co., and in accordance with the existing practice of that time, the chords were placed

rather close together (25 feet), with a 39-foot roadway and two 6-foot sidewalks, bringing the curb 7 feet outside the center line of trusses. The consequence of this was that a large part of the vehicular travel was carried outside the truss line, causing a badly unbalanced condition. In order to obviate this, the roadway was reduced to 26 feet with two 6 foot 10 inch sidewalks and a new flooring of dressed lumber laid. The effect of this in reducing the movement of the structure has been so marked that now there is no greater vibration than that expected in a pin-connected bridge, and it is believed that the bridge is ample up to the time that the growing needs of the city beyond Rock Creek shall require a wider roadway. So far as I am informed, there has been no trouble due to the narrowness of roadway since the reconstructed bridge was thrown open to travel on April 10 last.

On October 23, 1911, an agreement was entered into with the Baltimore & Ohio Railroad Co. to construct a subway and bridge to carry the tracks of the railroad over Cedar Street, Takoma Park, District of Columbia, according to plans and specifications prepared in this office, the contract price being 55 cents a cubic yard for excavation, $26,500 for the subway and bridge, $225 for lamp-posts, and $600 for railing, the work to be completed July 23, 1912, and afterwards, on account of the very severe winter, extended to September 23, 1912. Trains are now running over the bridge and the contract will be completed by September 1.

On April 23, 1912, a contract was entered into with Lake & Bright for constructing walls and steps at Belmont and Fifteenth Streets NW., in order to connect the two streets. The walls, plans for which were prepared in this office, consist of dressed concrete blocks and ornamental balustrade and will be in harmony with the park to be established north of Florida Avenue and between Fifteenth and Sixteenth Streets. The contract price is $2,084.40. The project will be fully completed, including the necessary paving, by September 15, 1912.

On August 10, 1911, a contract was entered into with Sanford & Brooks for constructing a wharf at the sand and gravel yard, the contract price being $14,500. This wharf included a very heavy pile platform capable of safely sustaining a superimposed load of 1,000 pounds per square foot (or sand piled 10 feet high), with a track for carrying the conveyor and a high platform with apron and chute for use in loading coal, etc., the plans being made in this office. The work was completed February 10, 1912, and the wharf immediately placed in commission.

At the request of the superintendent of the Home for the Aged and Infirm specifications were drawn up and a contract entered into for dredging and draining the land of the home. The work is still in progress.

Plans have been completed for the Q Street Bridge over Rock Creek. The work of construction, however, can not be begun until the condemnation jury shall have rendered its verdict and this verdict shall have been accepted. One hundred and eighty thousand dollars have been appropriated for this work, the limit of cost of which has been placed at $275,000.

The five south spans of the Aqueduct Bridge (No. 7) have been refloored at a cost of $5,307.61, while the work of painting the Anacostia Bridge over the Eastern Branch (No. 55) was begun in May and is still in progress. This bridge was previously painted in 1908 and will be given two coats of graphite paint. Calvert Street Bridge over Rock Creek (No. 30) was scraped and given a heavy coat of red lead, and M Street Bridge over Rock Creek (No. 35) was given two coats of graphite paint.

The Union Trust Co. and Amos H. Plumb having deposited the whole cost, a bridge (known as No. 202) was constructed across a valley north of Rock Creek and on Rock Creek Drive, at a cost of $2,580.90, the bridge having been designed in this office and built by day labor. It is a timber trestle bridge on a curve 162 feet 6 inches long, 38 feet high above the valley, with a 26-foot roadway and one 4-foot sidewalk, built for heavy travel. This bridge was completed in December.

I would again urge that $20,000 be appropriated for construction and repair of bridges for the ensuing year. Not only is this needed because the cost of work has greatly increased on account of the high price of lumber, but also because there are a number of small wooden bridges in the District which should gradually be replaced by concrete structures, not only for appearance sake, but also on account of the great and ever-increasing number of heavy motor trucks crossing them, causing loads greater than many were designed to bear. These bridges, a number of which were built by private individuals and came into the possession of the District through the dedication of the streets, are a constant source of expense and danger and would in a few years gradually disappear if the appropriation requested were granted.

I would again renew my former recommendation that the electrician who now receives $3 per day and the three assistant operators who now receive $2.50 per day on the Anacostia Bridge be placed on the regular roll at $1,100 and $900, respectively. These men work 365 days in the year, 8 hours a day, and I believe should be entitled to some leave. They constitute a permanent organization. Should this be

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Pennsylvania Avenue	Intersection of		2,435.50	35.
R	Sixteenth	8.00	3,062.87	228.
S	Seventh		3,881.85	306.
Second	Pennsylvania Aver		3,617.46	187.
Fourth	East Capitol	120.00	2,802.03	126.
Ninth	G	300.00	27,605.23	1,093.
Tenth	M	5.00	5,470.02	455.
Thirteenth	N	6.00	5,327.77	252.
Fifteenth	H	166.00	4,599.53	178.
Seventeenth	R		3,221.15	252.
Total		848.00	126,937.47	6,329.
Brennan Construction Co				
Heater method				
Total				
51,988 cubic feet top surface, at 57 cents				
40,939.20 cubic feet binder, at 43 cents				
1.92 cubic yards base, $3				
Grand total				

[1] Of the

urfacing by heater method for

Location.	Contractor.	
A Street, First to Second Streets NE	win.	Third Street,
Corcoran Street, Thirteenth to Fourteenth Streets NW	dock.	Third Street,
E Street, New Jersey Avenue to Fourth Street NW	win.	Fourth Street
I Street, Tenth to Eleventh Streets NW	hford.	Fifth Street,
Massachusetts Avenue, Seventeenth to Eighteenth Streets N	ns.	Sixth Street,
New Jersey Avenue, C to D Streets NW	or.	Twenty-secon
R Street, Lincoln Road to Eckington Place NE	hford.	Twenty-fifth
First Street, K to L Streets NW	Paving Co.	Thirty-third S
		Thirty-fifth S
First Street, Rhode Island Avenue to Bryant Street NW		Total
Do		

done, then the appropriation necessary to maintain the bridge should be $2,000 in order to provide for watchmen, electric power, and repairs; otherwise the regular appropriation of $5,600 will be sufficient.

Very respectfully,

THOS. C. J. BAILY,
Engineer of Bridges.

The ENGINEER OF HIGHWAYS.

TABLE A.—*Street railroads in operation in District, July 1, 1912.*

Name of company.	Underground electric.		Overhead electric.	
	Double track.	Single track.	Double track.	Single track.
Washington Railway & Electric Co.:	*Miles.*	*Miles.*	*Miles.*	*Miles.*
Metropolitan	8.60	3.98	.....	.....
City & Suburban	3.86	2.36	5.58	.....
Brightwood	.....	.....	5.93	.....
Georgetown & Tenleytown	.....	.....	4.16	.....
Anacostia & Potomac River	7.65	.....	3.10	.....
Washington & Glen Echo	.....	.....	3.88	.....
Total	20.11	6.34	22.65	.....
Capital Traction	20.19	3.60	3.57	.....
Columbia	2.77	.....	4.12	0.89
Washington, Alexandria & Mount Vernon	.30	.46	.....	.....
East Washington	.....	.....	.....	.50
Washington, Spa Springs & Gretta	.....	.....	.....	2.65
	43.37	10.40	30.34	4.04
Tracks used in common by Capital Traction and Washington Railway & Electric Co	1.55	.....	.....	.....
Tracks used in common by Washington Railway & Electric and Washington, Alexandria & Mount Vernon	.40	.....	.....	.....
Total	45.32	10.40	30.34	4.04

Baltimore & Washington Transit Co. 2.33 miles overhead single track, not yet in operation.

TABLES B AND C.—*Character and extent of roadway pavements, July 1, 1912.*

Section.	Asphalt.	Asphalt block.	Bituminous macadam.	Granite and rubble.	Vitrified block.	Cobble.
Northwest.....square yards..	1,678,786	37,593	6,372	167,620	16,747	32,705
Northeast.....do....	266,742	233,314	.....	25,193	3,883	.....
Southeast.....do....	173,358	215,327	.....	43,734	.....	8,689
Southwest.....do....	224,199	60,838	.....	191,729	3,138	17,310
Georgetown.....do....	135,952	21,204	916	58,677	1,635	14,426
Suburban.....do....	310,215	76,592	24,540	27,394	.....	.....
Total	2,789,252	644,868	31,828	514,347	25,402	73,130
Gutters.....square yards..	194,726	.....	2,794	.....	.....	.....
Railroad pavement.....do....	360,000	3,500	.....	150,000	4,200	.....
Total	3,343,978	648,368	34,622	664,347	29,602	.....
Miles	146.93	33.02	1.75	25.96	1.40	3.84

Section.	Macadam.	Gravel and unimproved.	Gutters on asphalt streets.	Gutters on bituminous macadam streets.	Pavements maintained by street railways.	Total.
Northwest..... square yards..	29,949	57,000	113,128	368	255,150	2,395,418
Northeast.....do....	23,751	203,512	22,766	.....	70,000	849,160
Southeast.....do....	25,812	274,086	12,832	.....	47,600	801,438
Southwest.....do....	26,852	125,448	21,609	.....	55,900	727,023
Georgetown.....do....	10,816	23,281	3,395	101	35,700	306,103
Suburban.....do....	1,314,455	1,400,000	20,996	2,325	92,400	3,268,917
Total	1,431,635	2,083,327	194,726	2,794	[1] 556,750	8,348,059
Miles	92.10	160.06	.....	.....	.....	465.06

[1] Includes 39,050 square yards of Scoria and wood block pavement.

NOTE.—2,124.02 square yards (907 feet long) cement roadway laid on Michigan Avenue NW.

TABLE G.—*Charges against street railroads (work in connection with paving and resurfacing).*

WASHINGTON RAILWAY & ELECTRIC CO.

Street.	From—	To—	Section.	Amount.
E	Eleventh	Thirteenth	Northwest	$750.80
Mount Pleasant	Sixteenth	Park	do	1,123.40
Connecticut Avenue.	Rhode Island Avenue	Dupont Circle	do	476.33
Butternut	Georgia Avenue	Fifth	do	47.51
D	Third	do	do	428.19
Florida Avenue	Intersection H		Northeast	42.44
H	Connecticut Avenue	Seventeenth	Northwest	529.53
H	At Madison Place		do	7.98
S	Seventh	Ninth	do	15.52
Q	Third	New Jersey Avenue.	do	65.45
Fourth	East Capitol	A	Southeast	14.68
Ninth	G	N	Northwest	2,160.72
Second	East Capitol	Maryland Avenue.	Northeast	8.35
Third	do	do	do	11.51
				5,682.41
Heater work:				
204 cubic feet surface, at 66 cents			$124.64	
53.20 cubic feet binder, at 28 cents			14.90	
				149.54
Minor repairs on various streets:				
1,937.25 cubic feet binder, at 48 cents			929.88	
2,099.20 cubic feet surface, at 63 cents			1,322.50	
				2,252.38
Total				8,084.33

CAPITAL TRACTION CO.

Pennsylvania Avenue.	Intersection of Fourth		Southeast	$23.99
Do	Eleventh	Thirteenth	do	11.12
New Jersey Avenue	K	N	Northwest	352.75
Second	Pennsylvania Avenue	C	Southeast	21.58
Florida Avenue	New Jersey Avenue	Third	Northwest	96.30
Pennsylvania Avenue.	Fifteenth	Seventeenth	do	715.72
V	Intersection Fifteenth		do	10.62
				1,232.08
Minor repairs on various streets:				
594.95 cubic feet binder, at 48 cents			$271.18	
625 cubic feet surface, at 63 cents			393.75	
				664.93
Total				1,897.01

WASHINGTON, ALEXANDRIA & MOUNT VERNON CO.

Minor repairs on various streets:		
184.20 cubic feet binder, at 48 cents	$88.42	
195 cubic feet surface, at 63 cents	122.85	
		$211.27

CHARGEABLE TO WASHINGTON RAILWAY & ELECTRIC AND CAPITAL TRACTION COMPANIES JOINT TRACKAGE.

Work in connection with paving Massachusetts Avenue between North Capitol and G Streets NW	$421.02

TABLE H.—*Work done by day labor under the appropriation "Repairs to streets, avenues, and alleys," July 1, 1911, to June 30, 1912.*

Brick sidewalk relaid	square yards	7,686
Asphalt block paved	do	17,271
Asphalt block repaved	do	11,048
Vitrified block paved	do	0.315
Vitrified block repaved	do	2,920
Macadam roadway	do	2,323
Curb reset	linear feet	1,689
Flag laid	do	690
Flag relaid	do	1,790
Granite block laid	square yards	2,960
Asphalt tile relaid	do	1,380
Cement walk relaid	do	643
Grading	cubic yards	2,315
Graveling	square yards	3,850
Dangerous holes repaired		3,700
Labor, including adjusting plumbing		$38,589.55
Material		14,621.62

TABLE I.—*Regular permit, 1912.*

Job No.	Location.	For whom done.	Grading.	Cement sidewalk.	Curb reset.	Granite block laid.	Curb set.			Brick sidewalk relaid.	Vitrified block paved.	Asphalt block paved.	Cement curb set.	Cement gutter laid.	Cash.
							6 by 20 inches.	8 by 8 inches.	Old.						
			Cu. yds.	*Sq. yds.*	*Lin. ft.*		*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	
2000	Alley, square 2708	Harriet T. and Ralph L. Galt.	190									230.			$566.80
2001	Alley, square 378	Merchants Transfer & Storage Co.				345									572.76
2002	1010-1012 C St. NW	Lewis Hoppenmarier									250.00				384.29
2003	1516 to 1534 North Carolina Ave. NE	Clarence B. Hight	63	87.33											146.42
2004	South side Monroe St. NW., between 18th and 19th Sts.	James A. Cahill		66.67											84.00
2005	East side Warder St. NW., between Irving and Kenyon Sts.	E. H. Gottwalls		27.72											35.76
2006	591 and 597 Columbia Road	Henrietta E. King		78.84											99.86
2007	North side Lexington St. NE., between 6th and 7th Sts.	Kennedy Bros. (Inc.)		465.30			639.18								1,205.54
2008	West side 9th St. NW., from Rittenhouse St. to alley.	J. Ed. Fowler	50	125.28											186.73
2009	1442 to 1446 Belmont St.	John C. Hoyt		47.57	35.00										69.12
2010	Northeast corner 4th St. and Pennsylvania Ave. SE.	Geo. R. Repetti		69.98											104.51
2011	14th St. side of 1500 14th St. NW	National Savings & Trust Co.		55.33											69.72
2012	South side Lamont St. from 19th St. eastward to alley and north side Kilbourne St. eastward to alley.	L. E. Breuninger			9.42		215.50								471.53
2014	2205 Massachusetts Ave. NW	O. H. P. Johnson		39.30											41.50
2015	Southeast corner Wisconsin Ave. and N St.	H. W. Fisher		113.62	126.50										158.40
2016	South side Ashmead Place NW., lots 205 to 208.	Saml. V. Hayden		77.27											100.98
2017	Northwest corner Wisconsin Ave. and Prospect Ave.	Probey Carriage Co.		49.92	72.30										71.05
2018	Randolph St., between 1st and 2d Sts.	John M. Henderson	90	72.85											143.76
2021	West side 9th St. NW., from Rittenhouse to Sheridan.	W. M. Terrell	44	128.60											187.45
2022	Columbia Road and Park Place	Bipp Bros.		378.00			25.00								513.81
2023	West side New Hampshire Ave., lots 30 to 33, square 2898.	Alex Millar		138.19	110.90		18.45								222.77
2024	East side 19th St., from Kilbourne to Lamont.	S. C. Briggs	229	275.17			356.65	9.40							952.44
2025	South side Rhode Island Ave. NE., between Lincoln Ave. and V St.	Harry Wardman		154.00											194.37

2026	C St. SE., between 4th and 5th Sts., lot 18, square 819.	M. I. Weller		44.74											46.82
2027	North side Kanawha St., lot 16 and west half lot 15, square 1873.	H. K. Dugdale		50.00											63.00
2028	East side 28th St. NW., south of Cathedral Ave.	N. L. Sansbury Co.		126.13											158.92
2029	East side Warder St. NW., between Newton and Otis Sts.	Middaugh & Shannon	30	57.05			98.81								211.89
2030	North side Newton Place, between Warder St. and Park Place.	.....do	63	130.42			218.82								481.26
2031	P St. side of Wisconsin Ave. and P. St. NW.	James O'Donnel		36.97	40.00										49.42
2032	Northeast corner 13th St. and Park Road	Carl W. Smith		109.45											137.90
2033	North side Kenyon St., between 5th and 6th Sts, lot 3.	G. B. Gottwalls		60.20											75.85
2034	North side Kenyon St., between 5th and 6th Sts., lot 2.	E. H. Gottwalls		33.33											42.00
2035	1100 16th St. NW	Wm. A. Smith		49.02	13.20										65.12
2036	455 H St. SW	Harry V. Lansdale		23.63											29.77
2037	North side Princeton Place NW., from New Hampshire Ave. to Rock Creek Church Road.	Alex Millar		100.65											126.81
2038	West side Sherman Ave., between Lamont St. and Park Road.	Annie Jones		29.27											36.87
2039	110 to 118 1st St. NW	Morris Weinstein		129.93	121.80										168.74
2040	East side 8th St. NW., between Webster and Allison Sts.	J. S. Gruver		55.60											70.37
2041	Woodward Apartment House	Thos. F. H. Smith Co.		40.30											50.77
2042	664 Pennsylvania Ave. SE	Wm. J. Brawner		5.50											4.38
2043	405 11th St. NW	Smal. J. Steinberger		58.88											75.77
2045	East side 10th St. NW., from N St. to alley.	F. A. Blundon						141.90							185.75
2046	3603-3609 13th St. NW	Swartzell, Rheem & Hensey Co.		53.16			79.64								160.50
2047	Southeast corner 9th and L Sts. NW	E. J. De Lacey		38.29											48.25
2048	3601 13th St. NW	H. N. Whitcomb		15.09			22.07								47.76
2049	North side Kilbourne Place NW., between 18th and 19th Sts.	James A. Cahill	58	236.67	9.42		368.30								793.72
2050	L, K, and 13th St. side Washington Sanitary Housing Co.	A. P. Clark, jr	445	835.53			840.73								2,184.61
2051	South side of M St. NW., between 17th and 18th Sts.	Wash. Loan & Trust Co.		90.03											93.03
2052	1720 M St. NW	A. W. Luker		23.32											23.59
2053	South side Allison St. NW., from 9th St. to Georgia Ave.	J. S. Gruver	40	162.11											245.21
2055	Northwest corner Kalorama and Ontario Roads.	L. Minch		62.53	29.05										88.11
2057	1830-1832 I St. NW	J. McK. Storrow		49.26											70.56
2059	Lincoln National Bank Building	Albert S. Gatley		207.13											215.14
2060	18th and Kilbourne Sts., lot 88, square 2600	James A. Cahill		81.85											103.13
2061	North side Kilbourne St., between 18th and 19th Sts.	.....do		13.66	4.71		27.40								52.79

TABLE I.—*Regular permit, 1912*—Continued.

Job No.	Location.	For whom done.	Grading.	Cement sidewalk.	Curb reset.	Granite block laid.	Curb set.			Brick sidewalk relaid.	Vitrified block paved.	Asphalt block paved.	Cement curb set.	Cement gutter laid.	Cash.
							6 by 20 inches.	8 by 8 inches.	Old.						
			Cu. yds.	*Sq. yds.*	*Lin. ft.*		*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	
2062	922 Madison St. NW	D. F. Groff		33.40											$42.08
2063	Kilbourne St. side, lot 64, square 2603	S. W. F. Swartzell		64.85	8.02		95.05								201.81
2065	591 Columbia Road	Claude F. King		66.93											84.33
2066	2917 to 2923 Q St. and 1601 30th St. NW	Geo. Y. Worthington & Son.		147.24	150.00										196.66
2068	North side Quincy St. NE., between 13th and 14th Sts.	T. E. Shields		66.67											84.00
2069	East side Woodley Place north of Calvert St.	Kennedy Bros. (Inc.)						182.45							212.31
2070	1348 to 1354 East Capitol St	John Scrivener		99.98											126.29
2071	507 9th St. NW	District Amusement Co.		53.40											67.81
2072	North side Jefferson St. NW., corner Connecticut Ave.	Wm. P. Lipscomb & Co.		142.18	144.12										187.50
2073	Alley, square 2604, from 19th St. westward.	S. C. Briggs and L. E. Brunninger.	100									382			816.70
2076	North side Hamlin St. NE. from 25th St. eastward.	J. T. W. Clement	137	61.92											157.13
2082	South side Hobart St. from Georgia Ave. eastward.	Howard C. Rothery		40.16											50.60
2084	Northwest corner 16th and V Sts. NW	Geo. Oakley Totten, jr.		63.31											79.77
2085	1109 Robinson St	D. J. Callahan		21.92				38.76							78.95
2013	South side Crescent Place and north side Belmont St., lots 13 to 20, square 2568.	Henry White	200	302.54				369.19							1,039.70
2064	North side Crescent Place, between 16th and 17th Sts.	do	287	184.88				205.80							699.01
2074	Alleys, square 1047	Appleton P. Clark, jr.	805								8,655.00				1,849.57
2079	South side Belmont St., front lots 1, 2, 3, 4, and 5, square 2567.	J. B. Henderson	263	319.54				356.65	8.69						1,082.86
2078	Belmont and Crescent Sts., sides lots 8 and 9, square 2568.	do	314	176.75				193.90							694.56
2090	South side Potomac St. SE., from 16th to 17th Sts.	Clarence B. Hight		281.33											285.80
2091	10th St., side of lot 69, square 340	Washington Loan & Trust Co.		146.49											148.81
2092	South Carolina Ave. SE., between 14th St. and Kentucky Ave.	Wm. Murphy		128.70											133.90

2096	North side Massachusetts Ave., between Naval Observatory and Cathedral grounds and south side Massachusetts Ave., between Observatory Circle and Wisconsin Ave.	David J. Howell		2,917.16											3,701.29
2058	7th St., side of Center Market	Washington Market Co.		278.65	226.00										355.41
2067	C St., Virginia Ave., and B St., and 17th and 18th Sts., side, square 173.	Pan American Union		1,816.93				1,700.70							[1]3,779.66
2081	Alleys, square 3098	Jos. Paul	317								218.00				650.04
2086	Northwest corner 11th and Q Sts. NW	Appleton P. Clark, jr.		232.24	24.75										246.73
2087	North side of Q St. NW., from 12th St. westward.	do		118.09	11.00										125.58
2089	East side 9th street from Rittenhouse St. to Quinton Place.	Brightwood Building Association.		110.61											[1]134.46
2093	North side Quebec St. NW., from Georgia Ave. to Warder St.	Kennedy Bros. (Inc.)					6.65				5.78		265.05	265.05	[1]239.27
2094	South side Quebec St. NW., from Georgia Ave. to Warder St.	do					9.50	8.65					277.76	277.76	[1]251.46
2095	Warder St. NW., between Irving and Kenyon Sts., lots 51 to 54, square 3049.	J. S. Gruver		33.33											42.00
2099	1201 19th St. NW	J. R. Dos. Passar		94.36	95.00										152.96
2100	4129 to 4137 New Hampshire Ave. N.W.	Alex Millar		66.73											84.08
2101	Northeast corner 8th and D Sts. NW	S. Kann Sons & Co.	6		75.00						137.50				213.02
2102	North side East Capitol St., between 13th and 14th Sts.	John Scrivener	11	95.46											126.63
2103	West side 2d St. NW., from Florida Ave. to alley.	Jos. Paul	15	87.68	25.00										125.70
2104	South side of R St. NW., between 18th and 19th Sts., lot 84.	Thos. A. Clayton		21.54	12.00										29.03
2105	South side of R St. NW., between 18th and 19th Sts., lot 85.	Clarke Waggaman		22.10	3.00										28.32
2106	K St. SE., between 9th and 10th Sts., lots 18 to 25.	James T. Kenyon		234.04											237.75
2107	3520 16th St. NW	G. T. Smallwood	44	232.71				9.42							[1]316.45
2108	South side R St. NW., from 16th St. to alley.	H. S. Hyman		145.51											147.81
2110	Both sides Walter St., between 12th and 13th Sts.	Harry A. Kite	69	671.49	93.00										760.66
2111	North side V St. and Rhode Island Ave., from Lincoln Road east, and Summit Place, Todd Place, and 2d St.	Harry Wardman		1,996.80											2,520.69
2112	North side Park Place, between 23d and 25th Sts., lots 2 and 3.	S. E. Snyder		36.53											41.64
2113	North side Park Place, between 23d and 25th Sts., lots 4, 5, and 6.	James T. Bell		50.00											63.00
2118	West side Rosemont Ave. and Klingle Road to the north line lot 1, square 2618.	Cassie Julian James		116.60											146.91
	Total		3,870	17,211.30	1,439.19	345	3,021.77	3,216.82	8.69		9,266.28	612	542.81	542.81	35,632.07

[1] Not completed.

TABLE K.—*Assessment work, 1912.*

Job No.	Location.	Grading.	Cement sidewalk.	Curb set, linear feet.			Curb reset.	Vitrified block paved.	Asphalt block paved.	Cobble paved.	Brick sidewalk relaid.	Cement curb set.	Cost.
				6 by 20 inches.	8 by 8 inches.	Old.							
		Cu. yds.	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	
3002	Alley, square 243	63						199.00					$305.61
3004	Alley, square 4065	3,100		35.00				2,213.00	450.00				6,754.24
3003	Alley, square 2828	680							1,199.00				2,498.56
3005	Alley, square 1014	586						898.00			35.00		1,716.79
3006	Alley, square 625							858.00	360.00		15.00		2,422.38
3007	Alley, square 1054	1,740		69.81					871.00				3,430.40
3009	Alleys north half, square 3031	635		41.00				1,484.00					3,166.64
3010	Alleys north half, square 3034	345						913.00					1,833.13
3012	Both sides L St., NW. between Connecticut Ave. and 20th St				4,677.96								6,268.26
3013	Both sides 4th St. NE., between East Capitol and Maryland Ave.			2,081.88									2,283.92
3014	Alleys, square 3500	102						420.00					779.29
3015	Alley, square 3072	200						622.00					1,149.84
3016	Alleys, square 373	455						815.00					1,507.43
3017	Alley, square 2562	200						391.00					967.65
3018	North side of Irving St. NE., west of 20th st	124	251.00										388.39
3019	West side 17th St. NE., between Jackson and Lawrence Sts	52	436.51										572.25
3020	North side Kearney St., between 13th and 14th Sts.		420.27										568.72
3021	South side M St. NW., between 33d and 34th Sts		322.54				63.00						366.57
3022	North side M St. NW., between 33d and 34th Sts		764.86				78.00						828.70
3023	South side M St. NW., between 34th and 35th Sts		469.82										487.95
3024	North side M St. NW., between Wisconsin Ave. and Potomac St.		273.56										284.88
3025	East side 34th Place, between Newark and Ordway Sts	15	331.93										426.89
3027	East side 20th St. NE. from Girard St. north		59.13										74.49
3028	North side Good Hope Road, between Minnesota Ave. and 16th St		307.78										387.80
3029	East side 23d St. SE., between Q St. and Minnesota Ave. and south side Minnesota Ave., between 23d St. and White Place	77	516.77										695.59
3032	South side Sheridan St. NW. from 9th St. to Georgia Ave.		267.15										336.61
3033	South side T St. from Rhode Island Ave. to 2d St.		207.79										212.45
3035	Both sides Taylor St. NW., between 7th and 8th Sts.		92.01										117.50
3036	Both sides Wisconsin Ave. NW. from M to Q Sts.		4,118.20	164.00			2,587.00						5,344.44
3037	East side 27th St. NW., between O and P Sts.		27.30				14.00						38.07

3039	South side M St. NW., between 35th and 36th Sts.		556.43				153.00						564.59
3040	West side Rock Creek Church Road from New Hampshire Ave. to Spring Road		324.84	600.20			22.50						1,189.69
3043	East side 8th St. NW., between Upshur and Varnum Sts		241.78	365.66									810.37
3044	Upshur and Varnum Sts., from 8th St. east		154.76										194.90
3045	North side Girard St. NE., from 12th to 13th Sts		410.92										517.75
3047	West side 26th St. N E., from Irving to Hamilton Sts.	94	333.24										474.17
3048	Both sides Irving St., from 24th to 26th Sts		707.79										891.81
3049	North side T St. and Rhode Island Ave., between 1st and 2d Sts		400.06										410.71
3050	North side S St., from 35th to 36th Sts		328.02	474.25			19.12						1,007.91
3051	East side 5th St. NW., between Elm and W Sts		327.11										413.73
3055	East side Georgia Ave., from Allison to Buchannon Sts	66	232.51										334.22
3056	East side 25th St. SE., from Q to R Sts	418	267.80										578.82
3057	South side Adams St. NW., from North Capitol to 1st St		229.61										290.92
3058	East side New Hampshire Ave., from Otis Place to Georgia Ave		264.55	55.90			81.00						402.49
3059	North side Park Road, between Georgia Ave. and New Hampshire Ave		240.24				274.00						381.15
3060	Alley, square 938	300						519.90					1,100.08
3063	Alley northwest part square 247	102						139.00					336.32
3070	Alley, square 2865	650						890.00					2,089.58
3073	Alley, square 1001			9.42			32.00	1,200.00			29.00		2,702.69
3076	Alley, square 734	357						787.30					1,275.56
3084	Alley, south part square 132	75						101.00					200.84
3085	Alleys, square 3025	856						1,252.00					2,604.61
3086	Alleys, square 258	221						694.00			18.00		1,352.77
3087	North side Massachusetts Ave. NW., between 22d and 23d Sts		219.93										223.42
3088	South side F St. NW., between 11th and 12th Sts		121.74				16.80						136.27
3089	East side 14th St. NW., between F St. and New York Ave		586.69										610.27
3090	17th St. NW., between Euclid St. and Columbia Road		283.72										357.48
3091	Euclid St. and University Place, lot 6		149.61				8.00						153.24
3092	South side Hamlin St. NE. from Queens Chapel Road to 20th St		391.87										493.75
3093	South side Spring Road from 13th to Holmead Place		192.52										244.15
3094	Both sides 25th NE. between Hamlin and Irving Sts.	597	650.85										1,169.36
3095	14th St. SE. between V St. and Good Hope Road				590.11								761.02
3100	North side Irving St. between Georgia Ave. and Warder St	190	478.75				26.00						719.77
3101	North side Euclid St. NW. between 13th and 14th Sts		74.76										95.08
3109	South side Brown Place from 32d St. to Wisconsin Ave	95	348.58	531.85			15.50						1,095.59
3118	Alleys in square south of 2827	500						958.00					1,627.15
3120	Mount Pleasant St., between Irving St. and Park Road				2,262.47								3,105.06

TABLE K.—*Assessment work, 1912*—Continued.

Job No.	Location.	Grading.	Cement sidewalk.	Curb set, linear feet.			Curb reset.	Vitrified block paved.	Asphalt block paved.	Cobble paved.	Brick sidewalk relaid.	Cement curb set.	Cost.
				6 by 20 inches.	8 by 8 inches.	Old.							
		Cu. yds.	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	
3042	West side 18th St. NE., between Jackson and Newton Sts	51	427.57										[1] $541.13
3072	Alleys, squares 3077, 3078, and 3079	950						1,050					3,485.38
3098	East side 4½ St., between K and L Sts. SW		305.78				286						398.13
3099	Both sides L St. SW., between 4½ and 6th Sts		1,330.84				121						1,418.65
3110	East side Kansas Ave., between Randolph and Shepherd Sts	148	97.05										[1] 197.86
3122	South side T St. NW., from 7th St. to Florida Ave.		286.34				8.3						[1] 234.08
3127	Both sides T St. NW., from 11th to 12th Sts		281.44		19.97		266.57						[1] 394.74
3156	South side East Capitol St., between 9th and 10th Sts		313.70				235						402.38
3158	Both sides 3d St. SE., from M to N Sts		1,038.76				1,211						1,430.45
3177	Both sides R St. NW., between 16th St. and New Hampshire Ave						929.99						[1] 219.88
3182	East side 8th St. SW., between F and G Sts		342.25				35						365.48
3185	East side Warder St., between Irving and Kenyon Sts		123.22										162.07
3189	Both sides 13½ St. NW., between B and D Sts		531.79										[1] 520.51
3227	North and south alley, southwest part square 728	26						132		20			248.70
3228	North and south alley, square 3501												[1] 663.55
3230	South half alleys, square 862	338						829.5					1,557.42
3269	Both sides 7th St. SW., between B and C Sts		1,269.06		798.43		39						2,357.43
3290	South side L St. SW., between South Capitol and alley west		240.87	216.36			9.42						513.60
3293	East side 10th St. SE., between L and M Sts		224,23	226.40			29.92						517.57
3295	East side 12th St. SE., between I St. and Potomac Ave		295.82				286.00						385.36
3297	East side 4½ St. SW., from N to O Sts		609.05				569.00						786.04
3298	East side 4½ St. SW., between L and M Sts		290.07				284						382.68
3299	East side 4½ St. SW., between Van and N Sts		335.51				315						431.54
3303	East side 4½ St. SW., from M to Van Sts		321.34				315						414.49
3305	East side 9th St. SE., from M to N Sts	118	418.94				23.40						501.45
3323	East side Blair Road, between Cedar and Chestnut sts			666.75			14.70						[2] 718.02
3330	South side Park Place SE., from 23d St. to Lot 40		279.05										356.89
3331	East side 8th St. NW., from Shepherd to Taylor Sts		228.69										297.60
3344	North side D St. NW., between 3d and 4th Sts				218.25								282.76
	Total	24,027	41,355.30	4,718.16	17,919.21	265.90	10,965.87	30,052.7	6,482.50	20	97	3,019.81	164,065.88

[1] Not completed.

[2] Cement curb set.

3201	North side C St. SE., between 4th and 5th Sts				248.30								323.76
3202	East side Madison Place, between Pennsylvania Ave. and H St				254.41								338.50
3222	Both sides 2d St. SE., between C St. and Pennsylvania Ave				627.23								823.18
3223	South side Olive St. NW., between 27th and 28th Sts			182.30									225.38
3008	Alley, square 3234	325		18.84			29.00		496.00				1,267.03
3026	South side Minnesota Ave., between Good Hope Road and 18th St		995.06										1,253.78
3034	East side Georgia Ave. NW., between W St. and Howard Place		748.85	13.67			1,069.00						1,085.36
3053	West side V St. SE., between Nichols Ave. and 13th St		329.86										443.97
3054	West side 13th St., between W and Pleasant Sts		193.70			265.90	17.90						336.91
3065	Alleys, square 3023	1,242		9.42			36.00	1,008.00					2,182.18
3069	Alley, square 361							120.00	200.00				893.19
3071	Alley, square 2581	690							395.50				1,351.47
3079	Alley, square 693	96						312.00					668.11
3096	East side 14th St. SE., between U and V Sts		199.26										203.99
3102	Both sides U St. SE., from 13th to Nichols Ave		615.16				12.40						832.90
3111	Alleys, square 963	162						361.00					1,003.91
3143	Alleys, square 908	350						400.00					1,139.78
3144	Alleys, square northeast of square 1065	107						533.00					960.56
3148	Alley, square 831	278						634.00					1,250.84
3164	Alleys, square 914	581						500.00					1,179.32
3174	Both sides 10th St. NW., between M and O Sts		1,338.36										1,376.09
3192	Alley, square 195								595.00				1,469.01
3212	Alley, square 5065	127						241.00					638.38
3218	North and south alley, square 252			9.42				142					532.84
3229	Alley, square 211							292	183				1,490.98
3272	Both sides New Jersey Ave. NW., between L St. and New York Ave				1,143.89								1,527.32
3278	Both sides O St. NW., from 9th to 10th Sts		268.36										767.17
3318	North side Good Hope Road SE., between 16th and 17th Sts		218.50										279.54
3319	East side Nichols Ave., between Good Hope Road and V Sts		682.20				80.6						727.52
3320	South side V St., between Nichols Ave. and 13th St		352.37				8						475.48
3321	West side Nichols Ave., from U St. to Good Hope Road		237.82				224						311.92
3328	North side Massachusetts Ave. NW., between T St. and Rock Creek		814.21										1,025.90
3329	West side Kentucky Ave., from Potomac Ave. to lot 81	93	276.75										334.84
3335	East side 13th St. SE., from Potomac Ave. to K St		278.15	241.53			24.35						584.67
3119	Alley, square 2833	1,076		14.13				647	433				2,409.55
3147	Alley, square 454	350						1,370					2,617.69
3163	Alleys in reservation B	200						2,333					3,978.72
3220	Alleys, square 1043	3,500						3,794					7,724.55
3232	Alleys, square 196				9.42				1,300				2,685.19
3264	Both sides S St. NW., between 7th and 8th Sts				503.60								663.86

TABLE K.—*Assessment work, 1912*—Continued.

Job No.	Location.	Grading.	Cement sidewalk.	Curb set, linear feet.			Curb reset.	Vitrified block paved.	Asphalt block paved.	Cobble paved.	Brick sidewalk relaid.	Cement curb set.	Cost.
				6 by 20 inches.	8 by 8 inches.	Old.							
		Cu. yds.	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	
3042	West side 18th St. NE., between Jackson and Newton Sts	51	427.57										[1] $541.13
3072	Alleys, squares 3077, 3078, and 3079	950						1,050					3,485.38
3098	East side 4½ St., between K and L Sts. SW		305.78				286						398.13
3099	Both sides L St. SW., between 4½ and 6th Sts		1,330.84				121						1,418.65
3110	East side Kansas Ave., between Randolph and Shepherd Sts	148	97.05										[1] 197.86
3122	South side T St. NW., from 7th St. to Florida Ave.		286.34				8.3						[1] 284.08
3127	Both sides T St. NW., from 11th to 12th Sts		281.44		19.97		266.57						[1] 394.74
3156	South side East Capitol St., between 9th and 10th Sts		313.70				235						402.38
3158	Both sides 3d St. SE., from M to N Sts		1,038.76				1,211						1,430.45
3177	Both sides R St. NW., between 16th St. and New Hampshire Ave						929.99						[1] 219.88
3182	East side 8th St. SW., between F and G Sts		342.25				35						365.48
3185	East side Warder St., between Irving and Kenyon Sts		123.22										162.07
3189	Both sides 13½ St. NW., between B and D Sts		531.79										[1] 520.51
3227	North and south alley, southwest part square 728	26						132		20			248.70
3228	North and south alley, square 3501												[1] 663.55
3230	South half alleys, square 862	338						829.5					1,557.42
3269	Both sides 7th St. SW., between B and C Sts		1,269.06		798.43		39						2,357.43
3290	South side L St. SW., between South Capitol and alley west		240.87	216.36			9.42						513.60
3293	East side 10th St. SE., between L and M Sts		224.23	226.40			29.92						517.57
3295	East side 12th St. SE., between I St. and Potomac Ave		295.82				286.00						385.38
3297	East side 4½ St. SW., from N to O Sts		609.05				569.00						786.04
3298	East side 4½ St. SW., between L and M Sts		290.07				284						382.68
3299	East side 4½ St. SW., between Van and N Sts		335.51				315						431.54
3303	East side 4½ St. SW., from M to Van Sts		321.34				315						414.49
3305	East side 9th St. SE., from M to N Sts	118	418.94				23.40						501.45
3323	East side Blair Road, between Cedar and Chestnut sts			666.75			14.70						[2] 718.02
3330	South side Park Place SE., from 23d St. to Lot 40		279.05										356.89
3331	East side 8th St. NW., from Shepherd to Taylor Sts		228.69										297.60
3344	North side D St. NW., between 3d and 4th Sts				218.25								282.76
	Total	24,027	41,355.30	4,718.16	17,919.21	265.90	10,965.87	30,052.7	6,482.50	20	97	3,019.81	164,065.88

[1] Not completed.

[2] Cement curb set.

TABLE L.—*Sidewalks and curbs, 1912.*

Job No.	Location.	Cement sidewalk.	Curb reset.	Curb set.		Cost.
				6 by 20 inches.	8 by 8 inches.	
		Sq. yds.	*Linear feet.*	*Linear feet.*	*Linear feet.*	
2501	Reservation 205, between Third and B Streets and Maryland Avenue NE	321.57	261			$389.87
2503	O Street NW. between Thirteenth Street and Vermont Avenue, and west side Thirteenth Street between O Street and Iowa Circle				126.34	169.83
2504	Reservation, North Carolina Avenue, B and Fifteenth Streets NE			344		415.25
2513	School building, southeast corner Eighth and T Streets NW	142.15	115		14.13	196.64
2515	Reservation 274, west side T Street NW. between Florida Avenue and Seventh Street	52.97				51.25
2516	Reservation, northwest corner Fourteenth and B Streets SE	115.29	376	344	140.47	111.54
2500	Blair School, south side I Street NE. between Sixth and Seventh Streets	170.34	166	9.42		255.39
2502	McKinley Manual Training School	385.64			348.61	803.54
2505	Reservation 155, Tenth Street, Q Street, and Rhode Island Avenue	58.46				74.24
2506	Reservation, Missouri Avenue and B Street and Maine Avenue and B Street	1,099.14				1,0[illegible]3.42
2507	West side Eighth Street SE. from C Street to Pennsylvania Avenue	570.91	90			606.06
2508	Flagler Street, rear of Gage School	111.02	8.05			109.91
2509	Reservations 62, 63, and 64, Scott Circle	1,722.21	50			1,708.74
2512	Reservation 310, Park Road west of Seventeenth Street	114.85				137.82
2514	Rhode Island Avenue, Ninth and R Streets NW	519.64				507.05
2517	Reservation 33, E and Seventeenth Streets fronts	450.64	86			458.29
2519	Reservation 173, north side New York Avenue between Eleventh and Twelfth Streets	267.25				323.06
2521	South side reservation south of Pennsylvania Avenue NW between Seventh and Ninth Streets	334.72				333.69
2525	Reservation at sewage pumping station	358.02	330.50			410.50
2528	Reservation, Kalorama Road and Nineteenth Street NW	138.45	5.09			137.24
2529	Both sides Seventh Street from B Street north to B Street south	483.75	59			[1] 488.23
2530	East side Third Street SE. between M and N Streets	77.46	98			103.54
2532	West side Seventh Street SE. between E and G Streets		96			[1] 27.90
	Total	7,494.48	1,364.64	353.42	489.08	7,933.00

[1] Not completed.

TABLE M.—*Miscellaneous work, 1912.*

Job No.	Location.	Appropriation.	Grading.	Cement sidewalk laid.	Curb reset.	Curb set.		Brick sidewalk relaid.	Granite block relaid.	Vitrified block relaid.	Cobblestone.	Asphalt block relaid.	Macadam roadway.	Macadam base laid.	Cost.
						6 by 20 inches.	8 by 8 inches.								
			Cu. yds.	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	
1502	Franklin St. NW., 5th St. to New Jersey Ave.	Northwest schedule		3				175		30					$132.25
1503	13½ St. NW., between B and D Sts.	do			60.00			736	133		258				399.63
1504	Franklin St. NW., between 5th St. and New Jersey Ave.	do					1,181.08								1,552.13
1505	13½ St. NW., between B and D Sts.	do					1,341.88								1,779.29
1400	Olive St. NW., between 27th and 28th Sts.	do	240												[1] 389.45
1602	Carrollburg St. SW., between M and N Sts.	Southwest schedule										75			24.25
1603	Maine Ave. SW., between 3d and 4½ Sts.	do	677					794	118						597.23
1700	12th St. SE., Lincoln Park to B St.	Southeast schedule													10.50
1705	do	do					998.98								[2] 1,289.96
1706	Both sides I St. SE., between 7th and 8th Sts.	do					458.44								[3] 577.73
1708	E St. SE., between 15th and 16th Sts.	do					790.90								1,025.68
1804	Florida Ave. NE., from 12th to 15th Sts., and K St. between 2d and 4th Sts.	Northeast schedule													240.52
1805	Both sides K St. NE., between 2d and 4th Sts.	do					1,581.62								2,140.09
5021	Butternut St. NW., between 5th and 6th Sts.	Grade and improve Butternut St. between 5th and 6th Sts.											7,225		5,506.72
5041	E St. NW., between 11th and 13th Sts.	Repave E St. NW., 11th to 13th Sts.							100						86.85
5050	14th St. SE., Good Hope Road to V St.	Grade and improve 14th St. SE., Good Hope Road to V St.	500											3,200	840.37
5051	do	do					543.90								704.33
5081	Keefer Place, between Lamont and 6th Sts.	Keefer Place, Lamont and 6th Sts.	20	40									3,940		1,683.06
5082	Both sides Keefer Place, Lamont and 6th Sts.	do					2,732.73								3,503.55
5091	Kearney St. NE., between 13th and 14th Sts.	Grade and improve Kearney St. NE.											1,784		1,525.95

5121	Michigan Ave. NW., 1st St. westward.	Grade and improve Michigan Ave. NW., 1st St. west.													28.25
5161	Phelps Place, north of S St. NW..	Pave Phelps Place NW. north of S St.	50							52					55.42
5162	.....do.....	.....do.....					597.71								807.41
5181	Rhode Island Ave. eastward to South Dakota Ave.	Grade and improve Rhode Island Ave. eastward.											10,417		9,887.30
5182	East side 20th St. south of Rhode Island Ave.	.....do.....		85											101.10
5192	Rock Creek Church Road NW....	Grade and improve Rock Creek Church Road.		45											46.50
5193	North side Rock Creek Church Road, between Georgia Ave. and 5th St.	.....do.....					1,473.74								1,895.44
5200	17th St. NW., between B and E Sts.	Grade and improve 17th St. NW., between B and E. Sts.													2,687.02
5201	West side 17th St. NW., between D and E Sts.	.....do.....					314.45								416.69
5220	17th St. NE., between Newton and Hamlin Sts.	Grade and improve 17th St. NE., Newton to Hamlin Sts.													2,085.08
5241	South side T St. NW., from Rhode Island Ave. to 2d St.	Pave T St. NW., 2d St. to Rhode Island Ave.				338.85									498.97
5250	23d St. NW., north of Calvert St..	Grade and improve 23d St. NW. north of Calvert St.			350.00										345.86
6001	Brightwood reservoir.....	Water department, District of Columbia, high service.													[4] 1,219.46
5003	W St. SE., between Shannon Place and 14th St.	Grade and improve streets in Anacostia.			[2] 2,341										1,133.86
5140	Mount Pleasant St., 16th St. to Park Road.	Grade and improve Mount Pleasant St.													996.69
5141	Mount Pleasant St., intersection of 16th St.	.....do.....													[5] 443.26
5191	Rock Creek Church Road NW....	Grade and improve Rock Creek Church Road.											6,100		4,303.70
5211	17th St. NE., between Rosedale St. and Benning Road.	Grade and improve 17th St. NE. between Rosedale St. and Benning Road.			[2] 79.26	[2] 181.51	[3] 1,024.14								548.53
5260	Crescent Place, lots 17 to 20, square 2568.	Paving roadways.....	800		30.00							775			1,898.87

[1] And regulating base. [2] B. S. curb. [3] Cement curb. [4] Repairing and oiling. [5] Oiling.

TABLE M.—*Miscellaneous work, 1912*—Continued.

Job No.	Location.	Appropriation.	Grading.	Cement sidewalk laid.	Curb reset.	Curb set.		Brick sidewalk relaid.	Granite block relaid.	Vitrified block relaid.	Cobble stone.	Asphalt block relaid.	Macadam roadway.	Macadam base laid.	Cost.
						6 by 20 inches.	8 by 8 inches.								
			Cu. yds.	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	
6003	De Russey Place, between Chesapeake and Ellicott Sts.	Grading streets, alleys, and roads, repairs to roads, water department, District of Columbia.													[1] $2,680.79
6021	North side Morse St. NE., between West Virginia Ave. and 12th St.	Elimination of grade crossings.		140		201.00									468.44
6041	No. 20 engine house	Buildings, fire department, District of Columbia.													[2] 121.10
5002	W St. SE., from Shannon Place to 14th St.	Streets in Anacostia													736.99
5004	Mount View Place	do													225.15
5005	13th St. SE., south of W St.	do													199.49
5072	Irving St. NE	Grade and improve Irving St. NE.													584.43
5111	Macomb St., 36th St. to Wisconsin Ave.	Grade and improve Macomb St. NW., 36th St. to Wisconsin Ave.													[3] 599.20
5121	Michigan Ave. NW., 1st St. westward.	Grade and improve Michigan Ave. NW.													[2] 259.60
5131	Massachusetts Ave. eastward, Wisconsin Ave. to Idaho Ave.	Grade and improve Massachusetts Ave. NW. eastward.													[4] 119.25
5210	17th St. NE., Rosedale St. to Benning Road.	Grade and improve 17th St. NE., Rosedale St. to Benning Road.													1,127.49
5231	16th St. NW. Kennedy to Montague Sts.	Grade and improve 16th St. NW., Kennedy to Montague Sts.													716.55
6002	Vicinity of Union Station	Elimination of grade crossings.													302.17
6009	Bridge across Rock Creek on line of Q St.	Bridge across Rock Creek on line of Q St.													180.76
6020	New Jersey Ave. SE., Virginia Ave. to I St.	Elimination of grade crossings.	500		1,400.00				3,310						2,017.37

6030	Plaza, Union Station	Elimination of grade crossings, improvement of Plaza.													575.42
6038	2d and N Sts. NE	Streets, District of Columbia, cleaning, etc.													146.40
6039	Sand and gravel wharf, 9th and Water Sts.	Sand and gravel wharf, District of Columbia.													192.84
6040	do	do													333.11
6042	Cement warehouse, 14th and D Sts. NW.	Elimination of grade crossings.							1,000						450.52
6045	Various streets	Streets, District of Columbia, parking commission.													274.31
6050	North side D St. SW., between 9th and 10th Sts.	Elimination of grade crossing.			200.00	100.00				75					704.85
6059	New Jersey Ave. SE., between Virginia Ave. and I St.	do						880							122.75
6063	Massachusetts Ave. NW., between North Capitol and G Sts.	do													90.50
6068	Bryant St., between 2d and 4th Sts. NW.	Water department, District of Columbia, high service.													61.25
6069	Brightwood reservoir	do													[4] 168.60
	Total		2,787	313	4,460.26	821.36	13,039.57	2,585	4,661	157	258	850	29,466	3,200	66,868.28

[1] Oiling and grading. [2] Laid 72 feet 12-inch pipe. [3] Oiling. [4] Laid 48 feet 21-inch pipe, and grading.

RECAPITULATION.

Paving roadways	$1,898.87
Northwest schedule	7,443.31
Southwest schedule	621.48
Northeast schedule	2,380.61
Southeast schedule	2,903.87
Construction suburban roads	40,806.64
Elimination of grade crossings	4,156.60
Improvement of Plaza	575.42
Repairs to roads	4,603.11
Q Street Bridge	$180.76
Buildings, fire department	121.10
Street-cleaning department, District of Columbia	146.40
Sand and gravel wharf	525.95
Parking commission	274.31
Water department, high service	229.85
Total	66,868.28

TABLE N.—*Whole cost work.*

Job No.	Location.	For whom done.	Grading.	Cement sidewalk.	Brick sidewalk.	Cement curb set.	Curb set.			Vitrified-block driveway.	Terra-cotta pipe.	Asphalt-block roadway.	Cost.
							8 by 8 inches.	6 by 20 inches.	Old.				
			Cu. yds.	*Sq. yds.*	*Sq. yds.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*		*Sq. yds.*	*Lin. ft.*	*Sq. yds.*	
6005	New York Ave. NW. between 17th and 18th Sts., lots 7 and 8, square 170.	American Institute of Architects.			250								$115.88
6006	812–814 5th St. NW	Thos. H. Hall								14			30.02
6007	Massachusetts Ave. Heights between Connecticut and Massachusetts Aves.[1]	American Security Trust Co.											2,585.90
6008	Alley, square 3031	John F. Murrell								6			8.00
6014	Northeast corner 19th and H Sts. NW	Geo. W. Linkens		35									107.43
6015	1349 Wisconsin Ave. NW	Allen E. Walker								17			19.78
6016	19th St. NW. between Lamont and Kilbourne Sts.	S. C. Briggs and L. E. Breuninger.	60										33.00
6017	Park Road between Georgia and Sherman Aves	Mary Baker								17.50			20.93
6031	Center St. side of 3401 16th St. NW	Louis Belrose		5									6.00
6013	1100 16th St. NW	Wm. A. Smith		19									22.80
6037	16th St. between Oak St. and Piney Branch Road	G. H. Armes									45		20.02
6043	1624 Crescent Place NW	Henry White										35	70.00
6047	Georgia Ave. north of Mill House Road	Annie C. Osborn			51				102				47.75
6051	1325 16th St. NW	V. B. Mackay-Smith		23									19.97
6034	Morse St. and West Virginia Ave.	B. F. Anderson		8									5.87
6052	16th St. north of Oak St., lot 804, square 3624	G. T. Smallwood									75		47.96
6053	1922 Nichols Ave. SE	James W. Bartley								13.50			27.13
6056	Blair Road, Takoma Park	H. L. Thornton				686.61							302.14
6056	....do	C. Livingston				177.95							78.30
6056	....do	Louis P. Shoemaker				135.61							59.67
6056	....do	Annie V. Woodward				42.85							18.85
6056	....do	S. Cottrill				79.84							35.13
6056	....do	E. R. Palmer				64.26							28.27
6056	....do	A. J. Bristol				84.48							37.17
6056	....do	John L. Fletcher				53.55							23.56
6056	....do	Wm. W. Prescott				74.97							33.00
6065	205 7th St. SW	Real Estate Trust Co.								23			35.43
	Total		60	90	301	1,400.12			102	91.00	120	35	3,839.96

[1] Constructing bridge.

TABLE O.—*Number of square yards and cost charged for repairs to cuts made by plumbers and others in streets, avenues, and alleys during the fiscal year ended June 30, 1912.*

Item No. 1 shows the number of cuts repaired for various plumbers.

Item No. 2 shows the number of cuts repaired and the cost thereof on "whole-cost" work to which 5 per cent is added for tools, clerk hire, etc., for the maintenance of the miscellaneous trust fund deposits, District of Columbia (operating account), which fund is used to pay all accounts for labor, material, tools, etc., used in this class of work, and also includes the work done for gas, electric-light, and telephone companies, which work is charged at other than the flat rates charged to plumbers.

Item No. 3 shows the number of cuts repaired on account of sewer department and the cost of the same.

Item No. 4 shows the number of cuts repaired on account of the water department and the cost of the same.

Item No. 5 shows the number of cuts repaired for work done on account of other appropriations of the District of Columbia and the cost of the same: also the cost of work charged against retents and appropriations of the General Government.

	Number.	Square yards.	Cost (amount charged).
Item No. 1—Plumber's cuts:			
Sheet asphalt	729	1,336.13	$4,439.74
Granite block	235	576.35	1,061.80
Asphalt block	397	1,530.80	2,393.51
Vitrified block or brick	379	693.70	1,803.47
Cobble and rubble	235	439.23	360.95
Macadam	660	2,238.82	1,820.21
Granolithic walks	865	924.74	2,277.97
Brick sidewalks	595	[1] 19,613.00	1,077.94
Bricks furnished	.....	[1] 23,463.00	234.63
Asphalt blocks furnished	.....	1,640.00	212.89
Vitrified blocks furnished	.....	10,197.00	203.93
Cuts repaired at actual cost plus 5 per cent	([2])	([2])	356.15
	4,095	7,739.77	16,243.19
Item No. 2.—Railroad, electric-light company, telephone company, and other corporations and individual depositors, account of whole-cost work	4,196	49,693.39	107,598.48
Item No. 3.—Various appropriations of the sewer department	435	8,128.85	8,112.42
Item No. 4.—Various appropriations of the water department	2,176	14,868.81	13,828.59
Item No. 5.—Various appropriations other than the above, including repairs to roads, streets, street lighting, electrical department, improvements and repairs, assessment and permit work, contingent and miscellaneous expenses, parking commission, etc	441	3,695.37	5,943.94
	11,343	84,109.79	151,721.62

[1] Feet, and not included in total number of square yards.
[2] Included in number of macadam cuts.

TABLE P.—*Grading streets, alleys, and roads, 1912.*

Job No.	Location.	Grading.	Cost.
		Cu. yds.	
1900	L Street SE., between Thirteenth and north and south alleys in center of Square 1047	3,648	$1,459.51
1901	Fourteen-and-a-half Street NE., between C and D Streets	5,270	961.75
1902	Various streets	7,914	3,115.87
1903	Kenyon Street, between Sixth Street and Park Place	1,664	236.25
1904	Chesapeake Street, east of Belt Road	3,570	698.31
1905	Twenty-eighth Street, south of Cathedral Avenue	2,270	321.50
1906	Twenty-fifth Street NE., between R. Street and Naylor Road	4,930	1,471.36
1907	Division Avenue NE., between Grant and Jay Streets and Hayes Street near Division Avenue	260	102.50
1908	Lamont Street NW., between Sixth and Warder Streets	335	108.37
1909	Sixteenth Street SE., between East Capitol and A Streets	1,200	604.12
1910	Livingston Place NE., between Sixth and Seventh Streets	400	156.00
1911	Park Place SE., between Twenty-third and Twenty-fifth Streets and square 577	1,180	288.75
1912	Eighteenth Street NE., between Jackson and Monroe Streets	100	58.75
1913	Seventeenth Street NE., between East Capitol and B Streets, and A Street between Sixteenth and Eighteenth Streets	200	56.87
1914	Twenty-fifth Street NE., between Hamlin and Irving Streets	2,050	820.92
1915	Hamlin Street NE., between Twenty-fifth and Twenty-sixth Streets	1,795	718.12
1916	Alley, square 2604	97	79.00
1918	K Street SE., between Fourteenth and Fifteenth Streets	500	180.44
1920	North Carolina Avenue NE., between B and Fifteenth Streets	465	121.25
1925	Belmont Street NW., between Sixteenth and Seventeenth Streets	1,800	1,057.75
1929	Alley in square 1043	500	478.50
1917	Woodley Road, between Connecticut Avenue and Twenty-seventh Street	100	154.75

TABLE P.—*Grading streets, alleys, and roads, 1912*—Continued.

Job No.	Location.	Grading.	Cost.
		Cu. yds.	
1932	Park Place between Manor Place and Otis Street	600	$192.00
1940	Alley in square 630	200	62.75
1927	Twenty-fifth Street SE., between Q and R Streets	1,197	418.93
1919	Thirteenth Street NE., between Newton and Otis Streets	1,400	550.24
1936	M Street NE., between Second and Third Streets	250	107.25
1919	Thirteenth Street NE., between Newton and Otis Streets, and Otis Street east of Thirteenth Street	1,400	550.24
1935	Woodley Road between Connecticut Avenue and Cathedral Avenue, and Twenty-third Street at its intersection	939	469.50
	Total		15,601.55

REPORT OF THE SUPERINTENDENT OF STREET CLEANING.

WASHINGTON, D. C., *September 3, 1912.*

SIR: I have the honor to submit the following report of the street cleaning division of the engineer department of the District of Columbia for the fiscal year ending June 30, 1912.

CONTRACT WORK.

Throughout the year the following work has been done by contract under the direction of this division:

Garbage.—The collection and disposal of garbage daily, including Sundays, from such hotels, apartment houses, markets, and other like places within the city of Washington and such of its suburban sections as may be designated, from time to time, by the Commissioners of the District of Columbia.

The collection and disposal of garbage daily, excluding Sundays, from May 16 to October 15, both days inclusive, and three times a week from October 16 to May 15, both days inclusive, from all places not embraced in the preceding paragraph within the existing fire limits of the District of Columbia and certain of the more thickly populated sections on the outside of and adjacent to the fire limits.

The collection and disposal of garbage three times a week from May 16 to October 15, both days inclusive, and semiweekly from October 16 to May 15, both days inclusive, from all places not included in the preceding paragraphs in the city of Washington and its suburbs, as such suburbs may, from time to time, be designated by the Commissioners of the District of Columbia.

The collection of garbage is made in wagons carrying a covered iron box which is lifted from the wagons and loaded on cars at the transfer station. This box containing the garbage is then shipped by rail to the disposal plant owned by the contractor, located about 32 miles from Washington, and the garbage is there disposed of by the reduction process.

Ashes.—The collection and disposal of ashes within the existing fire limits of the District of Columbia and certain of the more thickly populated sections outside of and adjacent to the fire limits, weekly, from April 16 to October 31, inclusive, and semiweekly from November 1 to April 15, inclusive, from private residences, boarding houses, lodging houses of not to exceed 25 rooms, and apartment houses containing not to exceed four families, and other like places, as may be designated by the Commissioners of the District of Columbia.

The collection and disposal of ashes from all private residences and such other like places corresponding to those included in the preceding paragraph from the remainder of the city of Washington and its suburban sections, as said suburban sections may from time to time be designated by the Commissioners of the District of Columbia, weekly, throughout the entire year.

The collections are made in wagons with canvas covers and disposed of by filling low ground on the outskirts of the city.

Refuse.—The collection and disposal of miscellaneous refuse, in the city of Washington and its more densely populated suburbs, as such suburbs may from time to time be designated by the Commissioners of the District of Columbia, once a week from all private residences, boarding houses, and lodging houses with not to exceed 25 rooms, and apartment houses containing not to exceed four families, and other like places, as may be designated by the Commissioners of the District of Columbia, and from such public waste boxes as may be established by the street-cleaning division in the machine-swept section of the city and District.

The collections are made in wagons suitable for this purpose and what is not salable is disposed of at an incinerating plant owned by the contractor.

Dead animals.—The collection and disposal of dead animals daily, including Sundays, throughout the year, form every part of the District of Columbia upon notification to the contractor of the existence of said dead animals.

The collections are made in vehicles suitable for the purpose, and the disposal is accomplished by the reduction process at a plant owned by the contractor located about 4 miles from the city.

Night soil.—The collection and disposal of night soil from all privies, except such as are established by contractors on construction work, and from all streets, avenues, alleys, roads, and open lots in the District of Columbia upon receipt of notice from the superintendent of street cleaning.

The collections are made in air-tight receptacles designed for that purpose and transported therein on barges about 8 miles from the city and there used as fertilizer on a farm.

Ashes from public buildings.—The collection and disposal of ashes and refuse from buildings under the control of the Commissioners of the District of Columbia as such may accumulate.

This work is done by contract under the direction of this division, but paid for from the appropriation for the maintenance of each building in proportion to the quantity removed.

MUNICIPAL WORK.

Throughout the year the following work was done under the immediate direction of this division:

Machine cleaning.—The cleaning of all paved streets outside the white-wing area every two days. On July 1, when this work was taken over from the contractor, the area cleaned amounted to about 2,500,000 square yards. During the year transfers were made in favor of white-wing work, reducing this area to about 2,167,000 square yards.

Alley cleaning.—The cleaning of all paved alleys in the District of Columbia about once every week. Additional alleys have been paved and added to those previously cleaned, bringing the total area cleaned from 985,000 square yards on July 1, 1911, to 1,033,000 square yards on July 1, 1912.

Suburban cleaning.—The cleaning of all macadam, gravel, and unpaved streets not taken care of by the county, about once every 10 days. During the past year additional territory was taken from the division of county roads and the total area increased from 905,000 square yards to 1,416,480 square yards.

Hand patrol.—The daily cleaning of all streets in the central portion of the city, amounting to about 2,005,000 square yards up to April 1, on which date this area was increased by 398,000 square yards and on May 1 still further added to, the present area being 2,745,804 square yards.

Flushing.—The flushing of cobble stone, granite, asphalt block and poorly paved streets in the white-wing section of the city, amounting to about 300,000 square yards, washed about twice weekly.

Squeegeeing.—The squeegeeing of nearly all of the smoothly paved streets in the white-wing area two or three times each week. Up to April 1 the area squeegeed amounted to about 1,368,000 square yards. Additional territory was added on this date, bringing the total up to about 1,766,000 square yards.

Dust prevention.—The sprinkling during the summer and fall of 1911 of about 60 to 70 miles of macadam, gravel, and unpaved suburban streets. No sprinkling was done during the spring of 1912. The oiling during the spring of 1912 of practically all the suburban territory, the entire area being covered about six times.

GENERAL.

The division of street cleaning serves a population of about 331,000 and covers an area of approximately 70 square miles.

The acts of Congress approved March 2, 1911, making appropriations for the expenses of the District of Columbia for the fiscal year ending June 30, 1912, authorized the commissioners to perform certain work, previously done under contract, namely, street sweeping, cleaning alleys and unimproved streets, $40,000 being made immediately available for the purchase of new equipment to be used in this service.

Complete preparations, including the purchase of equipment to the amount of $24,404.40, were made to [illegible] rk of machine, alley, and unimproved street cleaning previous[illegible] the work was started on the morning of July 1.

Unit costs have steadily decreased throughout the year and the averages are considerably lower than the cost of the contract work prior to June 30, 1911. In addition to the greater economy, it is believed that the work has been of a higher quality and the streets and alleys have been kept cleaner. The success of municipal street cleaning is attributed largely to the fact that it is much more flexible than the contract system.

Under the old method of machine and alley cleaning every street and every portion of each street received the same amount of sweeping and the same price paid for each thousand square yards swept, whereas under the present system more effort can be put on the streets and on the portions of each street which have the most traffic and therefore tend to be more dirty. Under the contract system, the schedules were arranged for each day's work and that amount performed each day whether it required a full day's work or not. Under the present system continuous schedules have been arranged so that each foreman and his gang clean as much area as is possible in the eight hours constituting a day's work and commences again the next morning where he left off the night before.

It has been found, by experiment, on certain well-paved and lightly traveled streets that by expending the same amount on white-wing work as was formerly spent for machine work it is possible to keep these streets in very much better shape, the white wings cleaning the streets every day, whereas the machines only cleaned every other day. On this account, it has been thought advisable to extend the white-wing work, on this basis, in certain sections and as funds are available, more men will be put to work on these streets and the squeegee work will be extended into this section, so as to put these streets on the same basis as the regular white-wing work. This is considered better than sweeping such streets by machine every day and costs about the same.

A number of experiments have been tried with the machine cleaning, in connection with the cost keeping to discover the most economical and efficient equipment for each section, and the conclusion has been reached that the machines do better work in batteries of three machines, one sprinkler, and four carts. The carts, however, are designed to hold nearly twice as much as an ordinary cart, as the machine sweepings weigh about half as much as dirt.

The alleys of Washington are well paved and wide, and, in the past, have always been cleaned by gangs consisting of one foreman, one one-horse sprinkler, six laborers, and three carts. On September 18, one one-horse sweeper was added, as an experiment, to one of the alley gangs, which has enabled this gang to increase the number of yards swept by about 25 per cent. On this account, steps are being taken to use one-horse sweepers with all the alley gangs.

In the fall of 1911 experiments in dust laying were tried on certain suburban streets with calcium chloride and emulsified oil instead of sprinkling with water, resulting in the decision to use only emulsified oil in the future. In the spring of 1912 practically all of the suburban streets were thoroughly cleaned and swept with a sweeping machine, without sprinkling, before an application of oil was made, and from then on applications of a mixture of about 1 gallon of oil to 6 or 7 gallons of water, spread in the proportion of approximately one-seventh of a gallon of the mixture to a square yard of surface, were made about once every 10 days or 2 weeks, the streets being cleaned with hand brooms previous to each application. By this method, the dust nuisance was almost entirely eliminated, less money was spent for sprinkling and oiling than for sprinkling alone during the previous year, less suburban street cleaning was necessary on account of there being less dirt and dust to be removed, and the general appearance of the streets was very much improved. By the oiling method, only enough equipment is required to cover the entire territory about once every 10 days or 2 weeks, while by the sprinkling method it was necessary to carry enough equipment in wet weather to cover the entire territory two or three times a day in dry weather.

Experiments during the previous year in street washing by squeegee and flushing machines proved so successful that this method has been permanently adopted and the work will be extended as funds are available. The squeegee machines are operated in batteries of one sprinkler and three squeegees, the sprinkler operated some distance ahead to allow the dirt which has become baked and stuck to the pavement to be softened by the absorption of water and easily dislodged by the squeegees. With one battery, which works in the hilly section of the city, it has been found necessary to use three horses in each squeegee machine. Four additional squeegee machines have been purchased during the year, making a total of eight. Two flushing machines have been purchased during the year, making a total of four. It has been the endeavor to cover nearly all the hand-patrol area two or three times a week with these washing machines, and in order to do this it has been necessary to work some of the machines on a double shift. By this system of street washing it is found that the streets are

almost entirely free from dust. Any dirt which may accumulate does not have time to be pulverized and the particles are too heavy to be disturbed or blown about by an ordinary wind. Under the old method of cleaning these heavier and coarser particles were removed, but most of the dust remained to become a source of annoyance when disturbed by the wind or rapidly passing vehicles, although the streets appeared to be clean.

In the leaf season of the previous year, when machine cleaning was done by contract, it was necessary to have an extra gang of sweepers, consisting of four machines, five broomers, and five carts and to pay the contractor at the rate of 22½ cents per 1,000 square yards for all of the territory swept by this gang. No more machine sweeping, however, is required to gather the leaves than in ordinary times and the extra weight is not considerable. To provide for the additional bulk this season removable extension sides (which can be used again in future years) were made for all the carts, increasing their cubic capacity, and by so doing it was found that the cost of machine cleaning was not considerably increased.

In times of snow and ice it has been the practice in preceding years to clean the principal street-car intersections and the crosswalks. In addition to this in the past year spaces adjacent to the street-car stopping points were cleaned so as to afford access from the cars to the crosswalks. In order to have this done before the opening of business hours, the men commenced work earlier in the morning than in preceding years. At the same time the horses left the stable with sidewalk plows. After most of the snow was removed from the sidewalks to the gutters, the horse-drawn gutter plows were used to open the gutters so the water could run off as the snow melted. After the above operations the men were employed in opening spaces from the center of the street to the gutters, spreading the snow in sunny places and otherwise assisting the snow to melt and the water to run off to the sewers. No attempt was made to haul snow and ice from the streets except from the intersection of street-car lines and other congested or crowded localities.

While the city of Washington is subjected to a good many snowstorms, very few of them are severe, and the climate is such that during the greater part of the winter the snow melts very rapidly.

Appropriations for the fiscal year ending June 30, 1912, included an item of $128,600 for the purchase of a site or sites for the erection of a building or buildings thereon for a stable and storerooms for the street-cleaning division. A site was purchased, plans and specifications were prepared, and the contract let for the construction of a stable in square 1043. This has been completed and occupied since March 18, on which date the old stable in square 367 was abandoned. A contract was then let, plans and specifications having been prepared, for the construction of a new stable in square 367, the foundations and walls of which were completed at the expiration of this fiscal year. The capacity of both stables, in addition to storeroom and repair shop, will be something over 200 horses.

In designing the stable in square 1043, sufficient space was allotted for improved and extensive storerooms and repair shops in which a number of modern machines have been installed, driven by individual electric motors. The most important of these machines are: one power hammer, one machine lathe, one band saw, one planer and jointer, and one drill press. This shop, in addition to doing all repair and rebuilding work, manufactures new equipment such as carts, wagons, trash boxes, brooms, pan scrapers, etc.

During the past year a cost-keeping system has been developed with the idea of attaining, through the study of comparative costs, greater efficiency and economy. This necessitated among other things the establishment of a modern method of storekeeping and the systematizing of methods of streets cleaning.

Under the present system of storekeeping, nothing is issued from the storeroom without a signed order from the foreman or assistant foreman and only enough supplies for the job then under way are issued at one time. The record of supplies on hand is kept on index cards, one card for each item, and shows the price, contractor, when ordered, amount on hand, and when and where issued, the index totaling about 1,600 cards. Another important feature of this card system is the establishment of maximum and minimum limits for each kind of stores, thus preventing any overstocking or shortages as stock is automatically purchased when the minimum limit is reached. Other advantages are the location of stock, all stock correctly priced, no stock lost, a check on supplies ordered, exact records of stock used and where used, and a perpetual inventory of stock always on hand and up to date.

No change has been made in the methods of keeping time for per diem employees, but the time book is now checked with the cost-keeping account, which eliminates possible errors.

Before being issued, the schedules of streets to be cleaned are platted on celluloid sheets mounted over maps and very carefully studied to prevent any dead travel. The areas of all streets cleaned have been accurately determined from the records of the surface division. Schedules are changed only upon order of the superintendent or assistant superintendent, and foremen allowed to clean only the streets on their respective schedules. Reports of the cleaned streets are sent into the office daily, and the areas computed.

With the idea of promoting the efficiency of the stables, what is known as the stable profile has been evolved. This is a record on profile paper showing daily the number of horses working, the total number fit for work, the total number convalescent, and the total number in stable. The line of full working force is also platted, and the curves of the various lines drawn in different colored inks. This record has also proven of great value in planning additions or changes in the working force, as the number of horses available can be ascertained at a glance. The stable efficiency, as shown by the profile chart, runs from 86 per cent in July, 1911, to 98 per cent in December, 1911. From December, 1911, to July, 1912, the average run is about 99 per cent, reaching 100 per cent in several places.

Each month every item of expenditure, such as stable costs, pay rolls, supplies issued to the work from the storeroom, rent, livery, etc., is distributed so that each street-cleaning gang is charged with its proportionate amount. This is shown on the section cost sheets, the totals of these sheets giving the costs for the month of each class of work. By dividing each heading, such as pay rolls, of the section cost sheets by the total yards cleaned, what is known as the unit cost sheet is obtained. This sheet, giving the amount per unit for each heading on the section cost sheet, is of particular value in comparing the costs of two different gangs or the changes due to variation in the methods employed, as the variation between any similar item for two sections can be investigated in detail.

Due to the amount of preliminary study necessary, the cost-keeping system has been subject to frequent changes. Since the 1st of May, however, the only changes have been minor and mainly in smoothing out various details. Computations are all made on a 20-inch engineer's slide rule and, of course, subject to error on that account, although checked wherever possible. The cost keeping for May and June checks with the accounting within $12 in a total of $59,000; an error of 1 in 5,000. Hereafter, it is intended to check the cost keeping monthly and correct any errors.

That the cost-keeping system has caused a saving in every class of work is brought out by the fact that the cost per unit is gradually lowered each month. The moral effect on both foremen and men is very evident from the increased efficiency when it becomes known that careful records are being kept of each branch of the work and comparisons made between the different gangs doing the same work.

Space has only been taken here to describe a few of the main points of the cost-keeping system, but after it has been in operation long enough to assure proper results it is intended to publish a separate report describing the cost-keeping system in detail and the benefits derived therefrom. In this report it is intended to add overhead charges, interest, and depreciation in the form of a percentage so as to allow of comparison with the costs in other cities.

The inspectors of the collection and disposal of city waste made investigations during the fiscal year of complaints and requests in number as follows: Garbage, 1,014; ash, 2,712; refuse, 4,087; night soil, 137. They furnished householders with regulation cards to the number of 5,073, served 2,033 unlawful garbage receptacle notices, and visited 48,419 houses.

The contracts for the collection and disposal of garbage, ashes, refuse, and dead animals are all five-year contracts and expire June 30, 1915. With a view to obtaining less objectionable, more efficient, and more economical services than are at present rendered by the contractors, the commissioners recommended to Congress that an appropriation of $10,000 be made for the purpose of investigating and reporting on the collection and disposal of city waste, including the preparation of plans and specifications for the construction of disposal plants. Congress did not see fit to make this appropriation, but the recommendation has been renewed in the estimates for the coming year.

It is estimated that the contractors for the disposal of city waste have invested in collecting equipment and disposal plants several hundred thousand dollars which they must have figured on recovering from the amounts received from the District of Columbia for the services rendered during the five-year term of their contracts, as these investments will be practically valueless on their expiration if they are not successful in obtaining the same contracts for the next term of five years. In other words, the District of Columbia is probably paying to the contractors, in addition to the cost of the work and the contractors' profit, the cost of complete disposal plants

and collection equipment every five years, whereas the disposal plants, if owned by the District, would probably have a life of 40 or 50 years. It is believed that the District of Columbia should, at least, own the disposal plants, which could be operated by the District and the collection of city wastes could be let to contractors or the whole service could be let by contract on the basis of the contractors leasing the disposal plants from the District of Columbia.

Under the present system the collections of garbage, ashes, and dead animals are practically perfect. The collections of miscellaneous refuse have not been so good, but this service is improving every day. This division has received a great many complaints in regard to the garbage transfer station and the dump at the miscellaneous refuse disposal plant. These complaints, however, do not arise from any fault of the contractor as he is living up to the requirements of his contract. In order to satisfy the complaints, a complete new arrangement will have to be perfected, which is one of the reasons for requesting the appropriation mentioned above.

Your attention is called to the detailed information and statements of appropriations, expenditures, and cost keeping submitted herewith.

Very respectfully,

J. W. PAXTON,
Superintendent of Street Cleaning.

Capt. MARK BROOKE,
Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.

FINANCIAL STATEMENT, STREET-CLEANING APPROPRIATIONS, FISCAL YEAR 1912.

"Streets, District of Columbia, 1912; Cleaning, etc.":			
Pay rolls—			
Hand cleaning	$83,953.88		
Machine cleaning	29,023.77		
Suburban street cleaning	11,469.42		
Alley cleaning	12,141.60		
Oiling and sprinkling	2,475.78		
Street washing	3,177.61		
Stable and repair shop	21,785.06		
Operating expenses—			
Office	317.52		
Rent of storage rooms	233.00		
Livery, inspectors' horses	1,800.00		
Oil for roads	5,853.98		
Oil, oiling material, mixing, etc., surface division	2,924.41		
Gas	259.93		
Gas bill protested	78.20		
Electric power	605.82		
Repair material	17,409.22		
Forage	28,333.50		
Stable supplies	6,249.56		
Equipment	34,769.67		
Unexpended balance	661.62		
Total		$263,523.55	
Repaid from other appropriations:			
"Cleaning snow and ice from streets, etc., District of Columbia, 1912"	2,829.28		
"Water department, District of Columbia, 1912, high service"	69.00		
"Contingent and miscellaneous expenses, District of Columbia, 1912, sweeping B Street"	480.00		
"Contingent and miscellaneous expenses, District of Columbia, 1912, street-cleaning allotment"	132.59		
"Streets, District of Columbia, 1912, disposal city refuse"	12.68		
Total amount repaid		3,523.55	
Amount of appropriation			$260,000.00

"Streets, District of Columbia, 1912; disposal of city refuse":		
Garbage	$88,384.00	
Ashes	73,053.00	
Refuse	16,559.00	
Night soil	16,600.00	
Dead animals	2,855.00	
Livery, inspectors' horses	1,095.00	
Office expenses	246.17	
Unexpended balance	1,152.83	
Amount of appropriation		$179,945.00
"Cleaning snow and ice from streets, etc., District of Columbia, 1912":		
Pay rolls	6,741.84	
Repaid to street-cleaning appropriation	2,829.28	
Incidental expenses	168.88	
Unexpended balance	260.00	
Amount of appropriation		10,000.00
Snow and ice, by act of Congress February 9, 1907, unexpended balance		2,224.20
"Contingent and miscellaneous expenses, District of Columbia, 1912; street-cleaning allotment":		
Purchase of horse	$260.00	
Office expenses	542.93	
Forage, superintendent's horse	198.91	
Repairs, buggy and harness	24.40	
		1,026.24
"Salaries, offices, District of Columbia, 1912":		
Amount expended	49,075.19	
Unexpended balance	1,044.81	
Amount appropriated		50,120.00
Total amount of appropriations		503,315.44

COST-KEEPING STATEMENT APPROPRIATION FOR STREETS, DISTRICT OF COLUMBIA, SPRINKLING, SWEEPING, AND CLEANING.

Machine cleaning (337,990,000 square yards, at $0.162 per 1,000)		$54,623.72
Alley cleaning (54,664,000 square yards, at $0.324 per 1,000)		17,752.45
Suburban street cleaning		14,559.76
Hand patrol (646,377,000 square yards, at $0.152 per 1,000)		98,132.85
Flushing (8,747,000 square yards, at $0.272 per 1,000)		2,385.84
Squeegees (98,328,000 square yards, at $0.096 per 1,000)		9,407.58
Sprinkling		2,310.07
Oiling (8,214,000 square yards, at $1.065 per 1,000)		8,748.63
Oil sweeping		1,062.56
Equipment purchased		34,769.67
Equipment manufactured		2,505.17
Stock, July 1, 1912	$21,687.71	
Stock, July 1, 1911	8,607.63	
Excess 1912 over 1911		13,080.08
Unexpended balance		661.62
Amount of appropriation		260,000.00

Miscellaneous data, street-cleaning work.

Class of work.	Wagon-loads.	Cartloads.	Cubic yards.	Tons.
Machines	56	18,380	36,872	18,436
Alleys	.....	5,051	7,577	5,051
Suburban	1,332	7,685	10,349	10,349
Hand patrol	7,441	.....	29,764	14,882
Oil sweeping	.....	.....	.....	.....

Class of work.	Average force per working day of 8 hours.							Days worked.	
	Carts.	Wagons.	Sprinklers.	Machines.	Squeegees.	Flushers.	Men.	Calendar.	Actual.
Machines	21.3	0.2	4.4	12.2	2.1	.....	66.8	274	257.0
Alleys	11.1	.....	3.3	0.9	.....	.....	39.0	260	202.3
Suburban	7.8	1.6	.....	.....	.....	.....	31.4	254	214.2
Hand patrol	.....	12.4	.....	.....	.....	.....	191.8	310	288.5
Flushing	.....	.....	.....	.....	.....	1.9	2.1	180	180.1
Squeegee	.....	.....	1.5	.....	4.6	.....	6.5	231	221.5
Sprinkling	.....	.....	5.1	.....	.....	.....	5.6	115	109.3
Oiling	.....	.....	4.5	.....	.....	.....	5.4	82.2	84.0
Oil sweeping	6.4	.....	.5	.9	.....	.....	21.8	21.3	23.0
Snow and ice	.....	.....	.....	.....	.....	.....	204.9	19.0	16.7

Table showing comparative data in connection with street-cleaning work from 1905 to 1912.

SQUARE YARDS CLEANED.

	1905	1906	1907	1908	1909	1910	1911	1912
Hand patrol	430,216,853	495,192,074	497,811,216	489,528,820	500,549,957	543,088,777	536,897,423	646,377,000
Machine sweeping[1]	323,337,975	299,313,747	373,029,844	423,398,395	453,052,168	435,397,855	367,242,484	337,990,000
Alley cleaning[1]	33,232,290	39,557,254	44,131,505	48,040,371	51,782,270	50,532,192	38,396,138	54,664,000
Suburban streets[1]	22,681,544	34,515,843	31,007,419	35,038,965	36,067,409	39,683,516	40,194,274	27,825,000
Squeegees	.....	.....	.....	.....	.....	.....	50,012,859	98,328,000
Flushing	.....	.....	.....	.....	.....	.....	5,589,367	8,747,000

TOTAL COST.

Hand patrol	$80,108.24	$88,337.65	$90,675.05	$80,110.43	$93,280.73	$96,610.13	$94,134.48	$98,132.85
Machine sweeping[1]	54,361.18	50,322.12	84,864.29	96,323.13	103,069.35	99,053.02	83,547.67	54,623.72
Alley cleaning[1]	11,631.30	13,845.04	17,652.60	19,216.15	20,712.91	20,212.85	15,358.44	17,782.45
Suburban streets[1]	15,892.99	16,606.60	17,708.32	18,390.90	17,640.36	17,437.01	17,006.26	14,559.76
Squeegees	.....	.....	.....	.....	.....	.....	5,814.57	9,407.58
Flushing	.....	.....	.....	.....	.....	.....	1,765.12	2,385.84

COST PER 1,000 SQUARE YARDS.

Hand patrol	$0.1862	$0.1785	$0.1824	$0.1896	$0.1863	$0.1778	$0.1753	$0.152
Machine sweeping[1]	.16 11/16	.16 11/16	.2275	.2275	.2275	.2275	.2275	.162
Alley cleaning[1]	.35	.35	.40	.40	.40	.40	.40	.324
Squeegees	.....	.....	.....	.....	.....	.....	.1162	.096
Flushing	.....	.....	.....	.....	.....	.....	.3157	.272

[1] Previous to 1912 this work was done by contract.

Table showing comparative data in connection with disposal of all city wastes from 1907 to 1912.

NUMBER OF UNITS COLLECTED.

Year.	1907	1908	1909	1910	1911	1912
Garbage.....tons..	41,269	44,309	45,069	44,236	48,214	47,445
Ashes.....cubic yards..	116,984	143,324	120,792	162,272	171,361	203,568
Miscellaneous refuse....do....	62,205	70,100	71,508	72,060	108,789	115,378
Night soil.....barrels..	21,094	21,163	23,894	26,280	23,834	21,266
Dead animals.....animals..	14,892	19,181	17,993	18,875	16,720	17,492

TOTAL NET COST.

Garbage.....	$77,869.00	$78,302.00	$78,376.00	$78,396.00	$68,400.00	$68,384.00
Ashes.....	53,540.00	60,744.11	65,098.40	65,852.40	73,111.00	73,053.00
Miscellaneous refuse.....	16,352.00	15,362.00	15,676.00	15,654.00	14,934.00	16,560.00
Night soil.....	16,442.00	16,466.00	16,486.00	15,984.00	16,272.00	16,600.00
Dead animals.....	2,350.80	2,366.80	2,358.80	2,360.80	2,855.00	2,855.00

COST PER UNIT.

Garbage.....tons..	$1.88	$1.76	$1.74	$1.77	$1.41	$1.44
Ashes.....cubic yards..	.45	.42	.53	.40	.42	.36
Miscellaneous refuse....do....	.26	.21	.22	.21	.14	.14
Night soil.....barrel..	.78	.77	.68	.60	.68	.78
Dead animals.....animal..	.158	.123	.131	.126	.170	.163

FINES DEDUCTED.

Garbage.....	$531.00	$98.00	$24.00	$4.00	.....	$16.00
Ashes.....	460.00	372.00	946.00	192.00	$39.00	97.00
Miscellaneous refuse.....	148.00	638.00	324.00	346.00	2,066.00	440.00
Night soil.....	58.00	34.00	14.00	516.00	328.00	.....
Dead animals.....	10.00	.....	2.00	.....	.....	.....

Specifications for the collection and disposal of ashes, garbage, dead animals, night soil, and miscellaneous refuse in the District of Columbia, and for the removal of ashes and refuse from buildings under the control of the commissioners.

[Work done under supervision of street-cleaning division.]

1. *Definitions.*—The term "garbage" wherever it occurs in these specifications means all refuse of animal and vegetable matter which has been used as food for man (except oyster and clam shells from business places) and all refuse animal and vegetable matter which was intended to be so used, and includes food condemned by the health department. The term "dead animals" means all dead animals, or parts thereof, not intended to be used as food for man. The term "night soil" means the contents of all privies (except such as are established by contractors on construction work), and human fecal matter deposited on streets, alleys, avenues, roads, and open lots. The term "miscellaneous refuse" means all refuse from places of residence and business, except garbage, dead animals, night soil, and ashes. In addition to the ordinary household rubbish it will be held to include discarded Christmas trees and greens and small branches from shrubs or vines, but will not include any material whatever in the nature of earth or sand, wall paper, lumber, brick, stone, plaster, or other substance that may accumulate as the result of building operations or repairs to yards and buildings. Manure is not included under any of the above classes of material. The term "ashes" will be held to mean ashes from coal and other fuel and will include such mineral substances as fallen plastering, etc., as may accumulate in connection with the ordinary conduct of dwellings and places of business, but not such as may accumulate as the result of building operations.

2. *Hours of collection.*—Garbage, night soil, miscellaneous refuse, and ashes must be collected between 7 o'clock a. m. and 6 o'clock p. m.; dead animals must be collected between 6 o'clock a. m. and 9 o'clock p. m. Special collections at other hours may be authorized by the commissioners, and may be required by them whenever in their judgment they are necessary.

3. *Receptacles.*—Garbage intended for collection will be deposited by [illegible] in water-tight covered vessels which can easily be handled by one [illegible] miscellaneous refuse intended for collection will be deposited by [illegible] receptacles suitable for that purpose and which can easily be handled by [illegible] All receptacles aforesaid will be placed at points accessible to collectors. [illegible] of hotels, apartment houses, markets, etc., larger receptacles will be [illegible] such restrictions as the commissioners may determine. In the [illegible] between citizen and contractor as to the point at which the garbage [illegible] laneous refuse shall be placed for collection the case shall be referred [illegible] tendent of street cleaning, whose decision shall be binding upon [illegible] Night soil intended for collection will be placed by householders [illegible] structed in accordance with the law. For the details of the construction [illegible] attention of bidders is invited to an act entitled "Act to regulate [illegible] Columbia, the disposal of certain refuse, and for other purposes" [illegible] 25, 1898.

4. *Defining accessibility—Provisions for failure to remove.*—The [illegible] collectors" in the foregoing paragraph (No. 3) of these specifications [illegible] mean the placing of the receptacles by the householder [illegible] or rear entrance of the premises (if collections are made from the [illegible] the areaway or other convenient place in front of said premises [illegible] from the front), and the unfastening of the gate or other [illegible] due warning by the collector by the free use of his horn [illegible] receptacle will be allowed on the sidewalk, street, or public [illegible] building has no yard or areaway large enough to hold the [illegible] accumulation is made between the regular collection [illegible] the free passage through such areaway, collection must be [illegible] house or building, provided entrance be afforded by a [illegible] or window. Nothing in these specifications shall be [illegible] on his regular collection day to stop at any premises [illegible] thereto is found locked at the time of his arrival, [illegible] opened, nor to notify the householders of his presence [illegible] free use of his horn, gong, or other signal: *Provided* [illegible] failure by any cause of his own, the contractor [illegible] miscellaneous refuse on his regular collection day [illegible] the next succeeding day, if so desired by the [illegible] premises neglected, whether the said material is [illegible] previously defined in this paragraph.

The fact that the contractor so removes the [illegible] the regular time of collection shall not be [illegible] dated damages incurred by such neglect, except [illegible] lection day are, in the opinion of the superintendent [illegible] dition as to excuse such neglect.

5. *Removal from street, etc.*—Each contractor [illegible] named in paragraph 1 of these specifications [illegible] on the premises of the householder, [illegible] in the opinion of the superintendent of [illegible] his order, remove such material from [illegible] any vacant lot, park, or uninclosed [illegible]

6. *Mixed material.*—The commissioners [illegible] of each class of material named in paragraph [illegible] practicable. But whenever, through [illegible] wise, two or more classes of such material [illegible] or place, the collection contractor [illegible] his collector, must notify the [illegible] found and request said householder [illegible] with the police regulations of the [illegible] holder refusing so to do, the contractor [illegible] tendent of street cleaning, giving [illegible] in his opinion it becomes necessary [illegible] contractor or contractors, if any [illegible] posed of, and such contractor [illegible]

7. *Unlawful receptacles.*—Every [illegible] and miscellaneous refuse will be [illegible] lations of the District of Columbia [illegible] any receptacle having a capacity [illegible] is found in unlawful receptacle [illegible] the use of such unlawful receptacle [illegible]

neglect (see par. 8) or authorized by the superintendent of street cleaning, but if such material is refused, the householder must be notified and the reason for such refusal must be explained to him by the contractor. If, upon the next regular collection day, lawful receptacles have not been provided, the contractor for collection must notify the superintendent of street cleaning forthwith, in writing, giving the name and address of the householder at fault.

The said police regulations instruct householders to keep garbage free from dishwater and as dry as practicable, to have both ash and garbage receptacles covered when awaiting collections so as to prevent animals from getting at their contents, to keep out rain, and to obviate freezing as far as possible. When garbage or ashes are found in frozen condition, the collector for such class of material shall not refuse to collect same without notification to the householder, and if said householder is willing that the collector shall attempt to loosen such frozen material and releases the collector from any unavoidable damage done to the receptacle in such attempt, said collector must remove such frozen material. Where the householder is not willing to release the collector from unavoidable damage in loosening the contents of the receptacle, and the material is refused, the contractor for the collection of such material must notify the superintendent of street cleaning of such refusal forthwith, in writing, giving the name and address of the householder on whose premises the frozen material is found; provided, however, that nothing in this or the preceding paragraph shall be held to release the contractor or contractors for collection from liability for liquidated damages incurred by neglect where material has been refused from any cause whatever (except inaccessibility), unless such refusal is reported in writing forthwith to the superintendent of street cleaning, as herein provided for.

8. *Accumulation.*—Householders are required to provide sufficient receptacles for each class of material to contain all of such material accumulating on the premises between the regular collection days. The contractor shall, on demand of the householder or the superintendent of street cleaning, collect all of such material, whether the same be in lawful receptacles or not, whenever an accumulation results through his neglect, but he shall not be required to collect such material as may not be in lawful receptacles and due to the neglect of the householder.

9. *Receptacles, and damage to same.*—The contractor for the collection of garbage must provide each of his collectors with a water-tight bucket, said bucket to be used wherever possible in the transfer of garbage from the householder's receptacles to the contractor's collection vehicle.

All receptacles, whether for ashes, garbage, or miscellaneous refuse, shall be replaced in the position where found by the collector, shall be handled carefully, and if damaged by the carelessness of the collector such damage shall be made good by the contractor for collection.

10. *Obstruction of streets, etc.*—If any street, avenue, alley, or road be obstructed so that vehicles used for the collection of any material mentioned in paragraph 1 of these specifications can not pass into, over, or through the same, the contractor for the collection of such material must cause it to be removed to collection vehicles on the streets, avenues, alleys, or roads which are not obstructed.

11. *Warning signal—Manner of collection.*—The contractor for the collection of any material described in paragraph 1 of these specifications must see that each collector employed by him gives, in such manner as may be directed by the superintendent of street cleaning, timely notice to the householder of his approach so that the material may be collected without undue delay. The contractor must see that no collector employed by him picks or sorts over material collected, and that it is transferred from the receptacles of householders to the vehicles used for collection, without unnecessary delay or exposure and without spilling. The contractor must see that each collector employed by him who opens a gate, door, or window leading to any premises, properly closes the same before departing.

12. *Notices of collection days, etc.*—The contractor for the collection of garbage, or miscellaneous refuse, and of ashes, shall at his own expense issue cards, approved by the superinedtendent of street cleaning, stating the days for collecting such material in particular streets and districts, and designating as nearly as may be between what hours the collector will call in each locality; shall, before beginning work, cause one or more copies of such cards to be left at every building from which such material is to be collected, and whenever it is proposed to make any changes in the days or hours of collection, and prior to making such change, shall cause one or more copies of cards showing proposed time of collection to be left at each building affected by it.

The information as to collection days and hours required on the above cards must be supplemented by such quotations from the police regulations concerning the size and nature of receptacles, their accessibility and the character of the separation of the various classes of material called for by such regulations as may be ordered in

writing by the superintendent of street cleaning, and such other information as may be desired by the contractor and approved by the superintendent.

Where collections are made semiweekly, at least two days must elapse between collections; where made three times a week, at least one day must elapse between collections.

13. *Collection districts and map.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall, before commencing work, and thereafter at least two weeks before each change, if there be any, from summer to winter service, and vice versa, subdivide the entire area from which collections are to be made into collection districts of such size as, for the purposes of his contract, can be readily served under ordinary circumstances by one vehicle; shall assign to each collection district a number; shall furnish the superintendent of street cleaning with a map showing the boundaries of each district, the number assigned to it, and the collection days in it; and shall forthwith notify said superintendent in writing of any change in boundaries and numbers of such collection districts which may be made after such map has been furnished, and incorporate such changes on said map.

If said map is not furnished nor said notification given as herein provided, the superintendent of street cleaning shall withhold his certificate from the regular semimonthly pay voucher until such map or written notice is received by him.

14. *Ownership of material.*—If a single contract be awarded for the collection and disposal of any material, all such material collected will be the property of the contractor from the time of its collection. If, however, separate contracts be awarded for the collection and for the disposal of any material, the contractor for collection will have no ownership in the material collected except as may be necessary to enable him to transfer the same; but must deliver all such material, without alteration or diminution, except such as may result from the use of disinfectants and deodorizers, to the contractor for disposal. Such material will be the property of the contractor for the disposal thereof after it has been delivered to him by the contractor for collection.

15. *Separate contracts for the collection and disposal and the transfer points.*—If separate contracts be awarded for the collection and for the disposal of any material, and it is desired by the latter contractor to dispose of any such material at some place not in or within convenient hauling distance from the city of Washington, and the commissioners consent thereto, the latter contractor must establish and maintain in or within convenient hauling distance from said city, such station or stations as in the opinion of the commissioners may be necessary for the reception and transfer of the material collected or delivered there, which latter stations must not be located at any place nor reduced in number nor changed in location without the consent of the commissioners.

16. *Incombustible residue—presenting mixed material.*—Where a contract is let for the disposal of any material or materials by burning, the driver for the District or for the collection contractor or any other person delivering such material or materials must not be kept waiting to empty, or after emptying his vehicle, or for any purpose whatever. If the material so presented is in its nature incombustible, or if it leaves an incombustible residue after burning, such material or residue must be disposed of by the contractor for disposal in a manner satisfactory to the commissioners.

If, however, material presented to any contractor for disposal is found to be mixed with any other class of material to the extent of 5 per cent or more, it may be refused by said contractor, if authorized so to do by the representative of the street-cleaning department stationed at the place of reception, and the person delivering it may be required to separate said mixed material properly, or to remove it forthwith upon failure to do so.

17. *Dumps for ashes.*—If a contract be made for the collection of ashes and authorizing their disposal on such public dumps as may be controlled from time to time by the commissioners, the contractor for such collection and disposal shall provide his own safeguards at such dumping places and shall take such precautions as may be necessary to prevent accident. The commissioners will assume no liabilty for accidents resulting through the contractor's use of said dumping places. The superintendent of street cleaning shall station at such places a representative who shall have general supervision and control over the points at which dumping must be done, the time of opening and closing said dump, the prevention of all fires on the dump, the trimming and handling of all material, the persons permitted on the dump, and shall determine the character of such material as is presented for disposal. Only clean ashes will be accepted at such dumps, and the representative of the superintendent of street cleaning shall be empowered to refuse all ashes mixed with other materials brought to the dump and to require such mixed material to be separated or to order it removed forthwith. The contractor shall be bound to conduct the dumping in accordance with the directions of the superintendent of street cleaning and the contractor must comply with such directions.

18. *Time of disposal.*—Garbage, dead animals, night soil, miscellaneous refuse, and ashes must be within the digesting tanks, or within the furnace or otherwise in process of actual disposal, not later than 7 o'clock a. m. on the day following its delivery at the place of disposal. Such garbage, dead animals, and night soil must be completely disposed of within 24 hours and all miscellaneous refuse and ashes within 72 hours after such delivery. The capacity of any plant or method established by any contractor must be sufficient to enable necessary repairs to be made without interfering with the work of disposal.

19. *Transportation.*—Arrangements for transportation and the method of disposal must be such that regular daily disposal will not be interrupted by reason of (1) the obstruction of the Potomac River by ice or otherwise, (2) the effect of bad weather on roads, (3) inadequate railway facilities.

20. *Lost articles.*—Articles of special value found in the material or on the dead animals collected must be kept by the contractor for the disposal of such material or dead animal, in his office, for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A list of such articles shall be forwarded daily to the superintendent of street cleaning, describing each article found since the preceding report, and showing the collection district from which it came, the name of the finder, and such other information as may be of assistance in discovering the owner.

21. *Plant.*—Each contractor must establish and maintain, without cost to the District of Columbia, beyond the price stated in his proposal or proposals, all such wharves, boats, cars, vehicles, buildings, furnaces, boilers, driers, presses, and other devices and apparatus as may be necessary to enable him to perform the work specified in his contract or contracts.

22. *Covered conveyances.*—Material collected under these specifications must be transported by the contractor or contractors within the District of Columbia in covered conveyances satisfactory to the commissioners.

23. *Collection vehicles.*—Vehicles used by the contractor for the collection of any class of material other than dead animals described in paragraph 1 of these specifications must be uniform and have capacities in exact multiples of 1 yard, except as otherwise authorized in writing by the commissioners. Such vehicles must be so constructed as to be loaded and unloaded and to carry their contents without offense to the public. They must be strongly built, must be plainly numbered on both sides and marked with the name and address of the collection contractor, and must be kept in good repair, well painted, thoroughly cleaned, and free from odor at all times.

24. *Care and use of garbage receptacles, vehicles, etc.*—Every receptacle used by the contractor for the collection of garbage, whether tank, can, barrel, or the body of a cart or wagon, must be metal, water-tight, strongly built, provided with a close-fitting metal or other tight-fitting cover satisfactory to the commissioners, and have a capacity of not less than 30 gallons. The cover if made of metal must be equipped with rubber or other pads to effectually prevent rattling and, together with the body of the receptacle, must be thoroughly washed inside and out once each 24 hours; if furnished by the contractor for disposal, this washing must be performed by said contractor.

Every vehicle used for the collection of miscellaneous refuse and for the collection of ashes must be so constructed as to prevent the escape of its contents during the process of transportation and must be covered with canvas or other cover. When in motion on streets and avenues, it must be tightly closed or covered, so that its contents are not exposed to view, and while being filled it shall not be uncovered for a longer time than is necessary, and every reasonable precaution must be used in transferring the contents of the householders' receptacles to prevent ashes and rubbish from blowing about.

25. *Animals.*—None but strong, serviceable horses or mules shall be used in connection with any work performed under these specifications, and ill treatment or neglect of same will not be permitted.

26. *Inspection of vehicles.*—Each contractor must present all vehicles used by him for inspection at such times and places as may be designated by the commissioners.

27. *Collection of dead animals.*—The contractor for the removal of dead animals will be required to remove them promptly as they may be found and reported to him. The commissioners will, however, assume no responsibility for the correctness of such report as may be made by any employee in the service of the said District, and the contractor for the removal of dead animals shall not charge for, nor can he collect from said District, any loss or losses incurred in responding to notification for the removal of a dead animal where said animal has, prior to such contractor's arrival, been removed by some other person or where the owner of such animal refuses to consent to its removal. Each dead animal must be removed skillfully and without offense and

transported in a closed vehicle to the place of disposal. Removal must take place, May to September, inclusive, within 6 hours, and from October to April, inclusive, within 10 hours after receipt of notification by the contractor by telephone or otherwise, or forthwith if directed to do so by the superintendent of street cleaning, and in the event or neglect so to remove the commissioners may perform such removal and charge the expense thereof to the contractor and may deduct and retain the cost thereof out of the moneys due or to become due to the contractor under this contract.

29. *Disinfectants.*—The contractor shall keep his plant and equipment disinfected in such manner and by the use of such disinfectants as the commissioners may direct.

30. *Collection of rubbish with other material.*—If miscellaneous refuse is collected by the contractor for the collection of any other class of material, at the same time and with the same horses, men, and vehicles as are used for the collection of such other material, such miscellaneous refuse must be kept entirely separate and distinct from such other material, inclosed in tight sacks or other approved covered receptacle, or in a part of the vehicle partitioned off from the rest of, or in racks placed above, said vehicle, and such sacks or other receptacles must not be hung from the sides or body of the vehicle and must be so closed that their contents can not escape during the process of collection and transportation. Such method of combined removal shall not be put into effect without the consent and approval of the superintendent of street cleaning.

32. *Dismissal of employees.*—If an employee of a contractor use improper language or be under the influence of liquor while on duty, or accept or demand pay from citizens for service rendered, or falsify any report he may be called upon to make, or do any other act which in the opinion of the superintendent of street cleaning is inimical to the proper and efficient prosecution of the contract, the contractor by whom he is employed, shall, upon demand, at once discharge such employee from his service, and shall forthwith furnish such employee's full name and the nature of the work performed by him to the superintendent of street cleaning. No contractor under these specifications shall employ, on any work under his contract, any person who has been discharged under the foregoing requirements.

33. *Reports by contractor.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall make daily reports to the superintendent of street cleaning, on blanks approved by him, which reports shall show the number of each collection district, the number of each vehicle employed therein, and the number of full loads and parts of loads, and the weight of each, or, in the case of dead animals, the number and species collected. Such reports shall show also the number of men and of horses employed each day with each vehicle. The contractor must also furnish to said superintendent, daily, a complete list of all failures on his part to comply with the requirements of his contract which have come to his notice during the preceding day, and the reason for such failure. The contractor for the collection and the contractor for the disposal of any material aforesaid shall furnish in writing such information in reference to the conduct of work under his contract as may be required from time to time by said superintendent or by the commissioners. If such information is not supplied within two weeks from the date of request for the same, the commissioners may, in their discretion, retain such money or moneys as may be due said contractor, until he has supplied the information requested.

34. *Other business.*—No contractor shall, without the written consent of the commissioners, engage in the collection or in the disposal of any material otherwise than as provided in such contract; nor shall he use any vehicle intended for the public collection of refuse of any sort under these specifications for any other purpose, except with the written consent of the commissioners.

35. *Telephone and visits.*—The contractor for the collection and the contractor for the disposal of any material mentioned in paragraph 1 of these specifications shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense. The contractor for the collection of any such material shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent, at such times as the superintendent or the commissioners may direct. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by any of the contractors under these specifications.

36. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

37. *Liquidated damages.*—If the contractor fail at any time or times to promptly and properly collect, receive, or dispose of material or any part thereof, duly offered to him, as required by the contract, the commissioners shall have the right to per-

form such work, from time to time, and charge the expense thereof to the contractor, and deduct the same, from time to time, from any money or moneys due or to become due to him under the contract. It is hereby understood and agreed that the District of Columbia will be damaged by such failure or failures upon the part of the contractor in addition to the cost to the District of Columbia of doing said work, if done by the commissioners; that the amount of said damage is difficult, if not impossible, of definite ascertainment and proof; and it is hereby agreed that the amount of such damages exclusive of said cost shall be estimated, agreed upon, liquidated, and fixed in advance, and they are hereby agreed upon, liquidated, and fixed at the amount of $2 for each such failure to collect garbage, night soil, or dead animals or ashes and refuse from buildings under the control of the commissioners, and the sum of $1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the contractor hereby agrees to pay to the District of Columbia as such liquidated damages, and not by way of penalty, the said sum of $2 for each such failure to collect garbage, night soil, or dead animals, or ashes and refuse from buildings under the control of the commissioners, and the sum of $1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the amount or amounts of said sums which may become due to the District of Columbia, by the contractor, for liquidated damages, may be deducted from any money or moneys due or to become due to him under the contract. Nothing contained in this paragraph shall be so construed as to affect in any manner the rights of the commissioners to annul this contract or to suspend the contractor for any cause as provided by paragraph 43 of the specifications.

38. *Employment of inspectors at expense of contractor.*—Ordinarily inspectors will be employed by the commissioners. If, however, on account of any apparent disregard by any contractor of the requirements of his contract, additional inspectors are, in the opinion of the commissioners, required, such inspectors will be employed by said commissioners in such number as they may deem necessary, and will be compensated by said commissioners at a rate not to exceed $4 per diem each, which compensation will be charged to the contractor for the supervision of whose work such inspectors have been employed and deducted from any money due or which may become due to him.

39. *Payments.*—Payments, except those for hauling ashes and refuse from buildings under the control of the commissioners, will be made semimonthly by checks of the disbursing officer of the District of Columbia, the payment for the first half of each month to be in the nature of a payment on account, and the amount of such payment shall not exceed one-half of the amount due for the entire month. Payments for each entire month shall be one-twelfth part of the per annum contract price, less the amount paid on account for the first half of said month.

40. *Bond.*—Good and sufficient bond with sureties or a surety company satisfactory to the commissioners will be required from each contractor conditioned for the faithful performance of the contract; that the contractor will be responsible for all claims for damages to persons, property, or premises arising by reason of the operation of any equipment or plant of the contractor, or the negligence of the contractor, his agents, servants, or employees engaged in the work under the contract, or in consequence of any negligence in carrying on the work under said contract, or by or on account of any act or omission of the contractor, his servants, agents, or employees, and that the contractor will promptly make payment to all persons supplying him with labor or material in the prosecution of the work provided for in the contract. The penalty of this bond will be equal to the specified or estimated annual amount of the contract, and if the estimated annual amount of the contract is less than 25 per cent of the total contract price covering the entire term through which the said contract is in force, the penalty of the bond will be 25 per cent of said total contract price.

41. *Transfers.*—No contract or any interest therein shall be transferred by the parties to whom the award is made, and any such transfer will be null and void.

42. *Patents.*—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

43. *Failure.*—If the contractor fails to commence the work at the time specified for its commencement, or fails to prosecute the work to the satisfaction of the commissioners, or attempts to transfer or assign his contract or any interest therein, or fails to perform any of the covenants of the contract, the commissioners, on 36 hours' notice in writing, may annul the contract or contracts affected by such failure or attempted transfer or assignment; or, on such notice, the commissioners may at their election suspend the contractor from the work, and in case of such suspension may at their further election enter upon, perform, and complete said work embraced in the contract, or may employ some other person or persons to do so, or may perform part of

said work and employ others to do the remainder. In case of such suspension the commissioners shall have the further right, at their election, to take possession of, without legal process, and to use such reasonable force and means as may be necessary to take possession of the plant and equipment used by the contractor upon the work and to use the same in doing the work, without compensation for such use, license so to do being hereby given by the contractor, and the contractor hereby forever releases and discharges the commissioners and the District of Columbia from any and all damages or injuries which may be sustained, suffered, or claimed by reason of such possession and use of said plant and equipment.

All cost, damage, expense, and money expended or incurred by the commissioners of the District of Columbia by reason of such failure of the contractor and the cost of completing said work shall be charged against and paid by the contractor, and any money due or to become due him under the contract shall be applied toward the payment thereof.

44. *Nuisance.*—All work done under any contract must be performed in such a manner as, in the opinion of the commissioners, will not create a nuisance nor be injurious to public health.

45. *Commissioners.*—Wherever the word "commissioners" is used, it is understood to mean the Commissioners of the District of Columbia.

46. *Supplementary service.*—If any contractor for the collection and removal of any class of material described in paragraph 1 of these specifications, fails, upon request by the commissioners, to provide in full the schedule collection service as required by the contract, the commissioners may, after one week's notice in writing to said contractor, cause to be instituted a supplementary collection service by vehicles employed under their own direction and may charge the cost of such additional service to the said contractor; and the amount of such cost will be deducted from any moneys due or to become due said contractor, and retained by the District or paid to the person or persons employed by the commissioners to do such work.

47. *Removal of night soil from temporary construction work.*—The contractor for the collection and removal of night soil will be required, and said contractor hereby agrees to collect and to remove within 48 hours after notice to do so, all such night soil as may accumulate in regulation privies established within the District of Columbia by contractors engaged on construction work; and said contractor for the collection and removal of such night soil hereby agrees to charge the person requesting such collection and removal at the rate of not to exceed $1 per barrel of 48 gallons capacity.

HAULING ASHES AND REFUSE FROM BUILDINGS UNDER CONTROL OF THE COMMISSIONERS.

48. *Work to be done.*—The work to be done consists of hauling all ashes and refuse from the following buildings under the control of the commissioners, viz, public-school buildings, houses of fire apparatus companies, police stations, District Building, municipal lodging house, police court, Home for ex-Union Soldiers and Sailors, and from any other District institutions or buildings that the commissioners may order, the same to be disposed of as required by regulations of the District of Columbia. Ashes may become the property of the contractor or, at his option, may be deposited on the dumps designated from time to time by the commissioners and in accordance with their direction. Paper and other light refuse must be removed in sacks or bags tightly tied, or otherwise secured, so that none of the contents can escape in loading or in transportation, and such refuse may become the property of the contractor or may, at his option, be delivered to the contractor for the disposal of miscellaneous refuse at the point or points designated by said latter contractor, and approved by the commissioners.

49. *Carts or wagons.*—Bidders for hauling ashes and refuse from buildings under the control of the commissioners must state specifically what facilities they have for doing the work, and all carts or wagons used on the work must have tight bodies and have a capacity of 1 cubic yard or exact multiple otheref. The carts or wagons are to be covered while going to the dump, and no vehicle is to be used unless measured by the sealer of weights and measures of the District, who will mark in a conspicuous place on the body the capacity of each when filled with a "well rounded off" load.

50. *Quantity.*—Nothing in this contract shall be so construed as to prevent the District of Columbia from hauling such quantities of such ashes and refuse, or from permitting others to remove so much of the same without cost to the District, as the commissioners may desire. The removal by the contractor of less than a full load will not be permitted. Rubbish and ashes must be hauled separately and must not be mixed.

51. *Payments.*—Payments for hauling ashes and refuse from buildings under the control of the commissioners will be made monthly for all jobs of work which shall have been completed during the previous month, as required by the contract. Bills

must be made in triplicate on forms to be furnished by the commissioners and presented monthly, together with the receipts, to the auditor, District of Columbia, District Building.

52. *Receipts.*—The contractor for the hauling of ashes and refuse from buildings under the control of the commissioners will be required to take receipts for all ashes and refuse removed by him.

53. *Time of collection.*—Collections of ashes and refuse from the buildings referred to in paragraph 48 of these specifications must be made within 48 hours after notice from the superintendent of street cleaning, and failure to make such collections will render the contractor liable to the provision of this contract providing for failure and for liquidated damages. (See pars. 37 and 43.)

REPORT OF INSPECTOR OF ASPHALTS AND CEMENTS.

WASHINGTON, *September 4, 1912.*

CAPTAIN: I have the honor to submit the following report of the operations of this office during the fiscal year ending June 30, 1912, summarized in the following tables:

	Total number of samples tested.
Asphalts:	
Bermudez	5
California	1
Mexican	4
Texas	3
Trinidad, Lake	1
Asphaltic mixtures:	
Block	38
Binder mixture	12
Block mixture	28
Cements	41
Cement binder	206
Cement topping	218
Compound	1
Macadam	24
Mastic	2
Topping mixture	220
Brick	7
Cements, Portland	9,258
Calcium, chloride	3
Conduit, fiber	1
Gasoline	3
Lathing, metal	1
Lampblack	3
Lead:	
Arsenate	4
Metallic	2
Oil:	
Linseed	4
Residuum	30
Road	36
Paint	3
Pitch, paving	2
Rock, trap	3
Sal ammoniac	12
Sand	310
Soaps	3
Stone:	
Binder	91
Crushed	32
Limestone dust	22
Tar, coal	8
Thermometers	12
Turpentine	2
Water	126
Miscellaneous	12
Total	10,794

ASPHALTS.

Tests of samples of asphalt used in the laying of pavements for the District of Columbia showed the following percentage of bitumen soluble in carbon bisulphide: From Cranfield Paving Co., 5 samples Bermudez, refined, representing 3,020 tons, 94.5 per cent; from Washington Asphalt Block & Tile Co., 1 sample, Lake Trinidad, crude, representing 1,200 tons, 53.4 per cent (after refining).

ASPHALT CEMENTS.

Penetration results of asphalt binder and topping used by the paving companies.

[Penetration at 77° F.]

	Contractor—cement.		
	Cranford Paving Co.: Bermudez.		Washington Asphalt Block & Tile Co.: Lake Trinidad.
	Binder.	Top.	Block.
Number of samples	206	218	35
Highest test:			
Yard	75	61	23
Office	76	64	24
Lowest test:			
Yard	54	61	19
Office	52	50	17
Average test:			
Yard	67	57	18
Office	67	57	19

BINDER MIXTURE.

Analysis of 16 samples taken from the Cranford Paving Co. showed an average of 3.9 per cent bitumen soluble in carbon bisulphide.

BINDER STONE.

During the year there were examined 91 samples of binder stone used by contractor (Cranford Paving Co.) in laying asphalt streets, representing 91,000 cubic yards, with no rejections.

ASPHALT SURFACE MIXTURES.

During the year 206 samples of Bermudez asphalt from the plant of the Cranford Paving Co. were submitted for examination and analysis. The maximum, minimum, and average per cent bitumen contained, and the average mesh composition of sand used is as follows: Highest, 11.4; lowest, 9.3; average, 10.4.

MESH COMPOSITION OF SAND USED IN MIXTURE.

Retained on sieves having—	Per cent.
20 meshes per linear inch	3.2
40 meshes per linear inch	21.5
60 meshes per linear inch	30.6
80 meshes per linear inch	17.4
100 meshes per linear inch	8.3
Passing 100 meshes per linear inch	19.0

LIMESTONE DUST USED IN SURFACE MIXTURE.

This material is used as a filler to reduce the percentage of voids in the sand used in the asphalt surface mixture. There were examined 22 samples (550 tons) from Cranford Paving Co., all of which passed the required degree of fineness, i. e., all to pass 30 and not less than 85 per cent to pass 100-mesh sieve.

SAND FOR USE IN SURFACE MIXTURES.

Of this material 285 scows equalling 39,070 cubic yards were inspected, of which 25,570 were rejected on account of coarseness and excessive percentage of mud.

PETROLEUM RESIDUUM.

All residuum used during the year by the contractors in the preparation of asphalt cements was the product of the Standard Oil Co. A total of 30 samples were submitted by the contractors for test and examination, which showed the following:

	Pounds.
Cranford Paving Co. (17 samples)	850,000
Washington Asphalt Block & Tile Co. (13 samples)	495,528

One lot, 50,000 pounds, at the plant of the Washington Asphalt Block & Tile Co. were rejected; contained water.

	Cranford Paving Co.					Washington Asphalt Block & Tile Co.				
	Specific gravity.	Gravity Baumé.	Flashed.	Burned.	Loss at 400° F. for 30 hours.	Specific gravity.	Gravity Baumé.	Flashed.	Burned.	Loss at 400° F. for 30 hours.
			°F.	°F.	°F.			°F.	°F.	°F.
Highest	0.9466	17.90	375	500	8.8	0.9629	15.4	450	560	5.2
Lowest	.9310	20.40	320	450	.6	.9524	17.0	335	450	.7
Average	.9392	19.01	349	478	4.8	.9562	16.4	396	524	2.51

ASPHALT BLOCK.

During the year there were manufactured by the Washington Asphalt Block & Tile Co., of this city, about 1,234,512 paving blocks. They were used in the paving of various streets, avenues, and alleys, approach to, and the plaza of the Union Station. These blocks were manufactured of Trinidad Lake asphalt, fluxed with petroleum residuum and a mineral aggregate composed of Potomac granite and limestone. Following is a table showing average results of tests of material used in their manufacture:

Average results of tests of asphalt cement and mineral aggregate used in the manufacture of asphalt blocks.

	As originally used in mixture.	Reduced to 50 per cent purity by addition of limestone dust for laboratory test.
Bitumen soluble in carbon bisulphide	63.3	50.0
Penetration at 77° F., 100 grams, 5 seconds	19.7	15.5
Penetration at 115° F., 50 grams, 5 seconds	98.6	70.4
Per cent of hardening after heating 300° F. for 18 hours	11.6	2.5
Per cent of loss after heating 300° F. for 18 hours	6.6	.3
Brittleness, in centimeters, drop of 25 grams, weight at 32° F	15.0	13.0

Asphalt block mixture.

Specific gravity		2.385
Bitumen soluble in carbon bisulphide	per cent	7.5
Mesh composition of mineral aggregate:		
Retained on one-fourth-inch mesh sieve	do	1.7
Retained on 20-mesh sieve	do	59.8
Retained on 100-mesh sieve	do	16.2
Passing 100-mesh sieve	do	22.3

ASPHALT MACADAM.

During the year there were laid by the Cranford Paving Co., under contract, about 22,156 square yards of asphalt macadam. The roadbed was prepared by the District and consisted of a first layer of trap rock ranging in size from 2½ inches to dust laid to a thickness of 5 inches and rolled with a 10-ton steam roller until thoroughly compact.

Upon this roadbed hot asphalt (Bermudez) macadam mixture was spread. This mixture consisted of 2 parts trap rock crushed to a size from 1 inch to dust and 1 part sand, to which was added about 5 per cent limestone dust. The crushed stone and sand were heated to a temperature of about 250° F., the limestone dust being added in a cool state to the hot mixture, conveyed to an asphalt mixer, and thoroughly mixed.

Hot asphalt cement was then added and the whole thoroughly mixed for a period of about five minutes; it was then hauled from the paving plant to the site of the work, spread over the road bed to a thickness of 3 inches, then rolled with 5 and 10 ton steam rollers until thoroughly compact. Over this surface was then spread a thin coating of hot asphaltic cement for the purpose of filling voids. A thin coating of trap rock screenings three-eighths-inch to dust was then spread on the surface as a top and final coating and rolled with a 10-ton steam roller.

Following is a table showing average results of laboratory tests of asphaltic cement and the mineral aggregate used in the preparation of the asphalt macadam:

Asphalt cement (Bermudez) soluble in carbon bisulphide	per cent	98.4
Penetration:		
At 32° F., 200 grams, 5 seconds		10.0
At 77° F., 100 grams, 5 seconds		62.0
At 115° F., 50 grams, 5 seconds		220.0
Ductility at 77° F. (length of stretch in centimeters at the rate of 5 centimeters per minute)		34.0
Brittleness at 32° F. (in centimeters, drop of 25 grams weight)		20.0
Loss by volatilization, at 300° F., 18 hours	per cent	3.0
Per cent hardening after heating 18 hours at 300° F	do	45.0
Action of water on cement, 7-day immersion		None.

MACADAM MIXTURE.

Bitumen soluble in carbon bisulphide (not including flush coat)	per cent	6.9

MINERAL AGGREGATE, MESH COMPOSITION.

Retained on—		
One-inch mesh sieve	per cent	0.3
Three-fourths-inch mesh sieve	do	12.8
One-half-inch mesh sieve	do	18.7
One-fourth-inch mesh sieve	do	26.3
8-mesh sieve	do	9.5
10-mesh sieve	do	1.3
20-mesh sieve	do	4.9
40-mesh sieve	do	8.0
60-mesh sieve	do	7.0
80-mesh sieve	do	3.5
100-mesh sieve	do	1.2
Passing 100-mesh sieve	do	6.3
Specific gravity of stone		2.935
Specific gravity of sand		2.700
Voids in aggregate	per cent	21.98

HYDRAULIC CEMENTS.

Barrels inspected and the average results of tests on same—Portland cement.

Brand.	Dragon.	Nazareth.	Old Dominion.	Security.	Vulcanite.	Universal.
Barrels [1]	29,759	16,612	16,865	35,925	1,170	727
Samples [1]	2,075	1,661	1,686	3,592	117	72
Residue retained on 100-mesh sieve, per cent	5.8	2.2	5.4	6	4.8	4.6
Initial set	1h. 48m.	2h. 30m.	2h.	2h. 13m.	2h. 13m.	1h. 30m.
Per cent water used:						
Neat cement	21	21	21	20	20	20
3 parts standard quartz	9.5	9.5	9.5	9.5	10	9.5
Temperature of air and water	80°F.	80°F.	80°F.	77.6°F.	76°F.	86°F.
Tensile strength in pounds per square inch:						
Neat, 1 day	530	486	470	392	318	336
Neat, 7 days	711	812	722	742	781	563
Sand, 1:3, 7 days	330	328	318	292	348	274

[1] In the testing of cement, samples are taken from 10 barrels of each 100-barrel lot and tested individually. The 9,208 samples tested represent 92,050 barrels, of which 1,050 were rejected.

Barrels of cement tested and by whom submitted.

District of Columbia	52,518
W. F. Brenizer Co	20,750
Cranford Paving Co	16,685
Municipal architect	727
Harper & Voigt	1,370
Total	92,050

The materials as enumerated in Table No. 1 represent samples gathered by this office from the two paving plants and the contractors' warehouses and those submitted by the immediate heads of the departments of the District government. Of the latter, statements showing results of tests were submitted to the immediate head of the department submitting the samples.

The water tests referred to in the table were made at the request of the superintendent of sewers and represent samples taken by a representative of this office from the Potomac River at Giesboro Point and at the Highway Bridge, tests being made for dissolved oxygen.

During the year daily visits have been made to the asphalt plant when in operation, and sites of paving work in progress; visits to the asphalt block plant have been at least weekly and more frequent when necessary. These visits are for the purpose of personal inspection and the giving of directions to the inspectors stationed at these points.

Very respectfully,

J. O. HARGROVE,
Inspector of Asphalts and Cements, District of Columbia.

Capt. MARK BROOKE,
Corps of Engineers, U. S. Army, Assistant to the Engineer Commissioner, District of Columbia.

REPORT OF THE SURVEYOR, DISTRICT OF COLUMBIA.

WASHINGTON, *September 17, 1912.*

SIR: I have the honor to submit herewith the following report of the operations of this office, including the street extension division, for the year ending June 30, 1912:

The total amount of fees received by this office for work done for private parties was $19,504.55. While the number of private orders has been greater than the previous year, the total amount of the fees has been slightly less, due principally to the less expensive character of work.

There have been surveyed and subdivided a number of large agricultural tracts, creating in all 95 new squares. The names of some of these subdivisions are as follows: Congress Heights Extension, Chillum Castle Heights, Fairlawn, Chevy Chase Grove, Bradbury Heights, Villa Park Heights.

These large subdivisions indicate considerable development and activity in suburban property in the northeast and southeast part of the District.

The number of individual lots surveyed for private parties was 2,852, which is a considerable increase over that of the previous year.

Surveys to verify walls of new buildings being constructed amounted to 1,011, and individual buildings inspected 2,502, which is a large increase in this class of work over any previous year.

There were 5,849 new lots created by reason of new subdivisions.

The number of orders for work received by this office for private parties was 4,224. In addition to these the office has been engaged in doing a large amount of work for which no fees were charged, such as work for the various departments of the District government, which is shown in the table below, and also work for the General Government, of which there has been an unusual amount during the past year.

The following table is submitted as a matter of comparison and convenience, and will show the relation of the work for the past year with that for the two previous years:

	1909-10	1910-11	1911-12
FOR PRIVATE PARTIES.			
Individual lots or parts of lots surveyed in city and county	2,854	2,624	2,852
Certificates of survey issued covering one or more lots	1,290	1,283	1,178
Duplicates of above recorded in survey certificate books	1,290	1,283	1,178
Separate surveys made to verify walls	954	799	1,011
Individual buildings inspected as to location of new walls	2,422	1,987	2,502
Walls moved before final certification	490	697	1,007
Large tracts in county surveyed, subdivided, and recorded	25	23	16
Outline surveys in county of unsubdivided tracts	98	83	68
Subdivision blanks prepared	627	519	517
Duplicate subdivision blanks prepared for assessor	627	519	517
Subdivisions recorded	561	492	507
Total of individual new lots in subdivisions	7,706	5,638	5,849
Plats of one or more recorded lots to accompany applications for building permits (commonly called building plats)	1,400	1,300	1,375
Plats made under regulations for theaters, stables, motors, etc	122	71	83
Indorsements on survey plats	1,290	1,283	1,178
Indorsements on wall survey plats	954	799	1,011
Estimates of cost issued in triplicate	4,533	4,012	4,224
Plats made up on order of private parties	4,189	3,798	3,754
Total of fees paid to collector of taxes by private parties	$22,891.80	$21,496.17	$19,504.55
FOR THE DISTRICT OF COLUMBIA.			
Surveys for the District of Columbia	92	106	99
Plats recorded (condemnations, dedications, etc.)	84	65	66
Postal-card reports concerning walls to owners	954	799	1,011
Reports concerning walls to building inspector	995	836	1,034
Assessment and taxation plats recorded	327	314	276
MISCELLANEOUS.			
Total of surveys for the District of Columbia and private parties	2,459	2,294	2,372
Total of plats, public and private, including plats drawn in books	6,733	6,247	5,688

PENDING LEGISLATION.

Under this heading I wish to call your attention to the following bills, which were prepared and sent to Congress:

Senate bill No. 4854, providing for the condemnation and opening of all streets in the Barry Farm. Passed the Senate.

Senate bill No. 5333, for the widening and extension of Spring Road, Georgia Avenue to Twentieth Street. Passed the Senate.

Senate bill No. 4107, giving the commissioners authority to institute condemnation proceedings for the extension of streets. Introduced in the Senate.

House bill No. 12160, Senate bill No. 1069, for the condemnation of Minnesota Avenue in accordance with the highway plan. No action taken.

Bill providing for the widening of Bennings Road NE.

Bill for the extension of Fourteenth Street and Alaska Avenue NW.

Bill for the extension of Oak Street NW to Fourteenth Street.

Of the various bills before Congress, considered by this office, the above-mentioned would seem to be the most meritorious, and should be urged for enactment into law. A report on each one of these bills has been filed with bill when forwarded, explaining in detail their importance, and a repetition would seem unnecessary in this report.

PARKS.

In this connection I wish to call your attention to the following items which were inserted in last year's commissioners' estimates to Congress: Mount Hamilton Park, Piney Branch Parkway, Klingle Road Valley Park.

These matters have been before Congress, and the proposed parks are in keeping with the plan as provided by the Park Commission, which was submitted in 1902. They are of great importance to the entire District and the public at large, in order to carry out a system of parking which will make Washington the city beautiful. Much of the natural beauty of these parks is being destroyed by the encroachment of improvements, and the land becoming a public dump, which will in time render them unfit for natural parks, the great beauty of which has been provided by nature. The value of the land for these parks is increasing, and their acquisition if delayed will become more expensive each year. This is shown by the recent assessment as compared with the prior triennial assessment. The Piney Branch Parkway will show an

increase of over 26 per cent. An increase will be shown in all of the other proposed parks.

In a separate report there will be a recommendation providing for the acquisition of small triangles outside of the original city limits created by the intersection of streets. Many of these small parks exist in the original city and tend to beautify the city and make it more healthful.

I wish to urge my previous recommendation in regard to what is known as House bill No. 9238, and request action upon the same. This authorizes the surveyor to place upon the official records, for each plot of ground in the District of Columbia, a new number, so that these numbers may be used for any purpose. The same are now carried upon the assessor's books for assessment purposes only, whereas this office carries upon the index local names of all subdivisions, such as Takoma Park, Petworth, etc., while the assessor designates them by new square numbers. These old subdivision names are becoming more obsolete each year, and the new designations of the assessor more in use. This causes much confusion and complication. There is certainly no legislation more important for the convenience of this office. This bill provides for the small appropriation of $4,000.

NEW LEGISLATION.

Under the head of new legislation I will recommend the following condemnations, in accordance with the highway plan:

Widening of Georgia Avenue from Florida Avenue to the District Line.

Widening of Wisconsin Avenue from its intersection with Thirty-seventh Street to the District Line.

Extension of Thirteenth Street from Spring Road to Longfellow Street NW.

Georgia Avenue and Wisconsin Avenue are the most traveled highways leading from the city into Maryland, and they should be widened in accordance with the highway plan before improvements will make their widening prohibitory. They are both occupied by car lines, making the roadway entirely too narrow for the heavily loaded farmers' teams coming into the city from Maryland.

A large part of Thirteenth Street has been acquired by dedication between the points mentioned, but other parts of it could not be acquired in this way on account of the serious way in which it would intersect the property through which it would extend, and it is believed the only way this can be acquired within a reasonable time is by condemnation. If this extension were made it would open up and connect a number of the most active subdivisions in this part of the District, and giving them the only outlet to the city that is not now occupied by street cars.

Some action should be taken for the acquisition of Fort Drive and the forts connected. The beginning of this was authorized by the current appropriation act, which provided for the condemnation of Fort Davis and Fort Dupont for park purposes, and a connecting avenue between. This Fort Drive is provided on the highway plan, but will be slow of realization by dedications, and the only hope of their acquisition would be by authority of Congress similar to that referred to above. This Fort Drive is recommended by the Park Commission in 1902 and should not be delayed, for these old historical forts of the Civil War are fast being obliterated by reason of subdivisions and other improvements. This boulevard would connect the chain of forts surrounding the city, situated upon the highest ground in the District and giving a view over the city and spreading out beyond to the hills of Virginia, a view which is the most beautiful to be had in the District of Columbia, in beauty to be compared with the palisades of the Potomac, but utterly different in character.

SURVEYS OF OLD SUBDIVISIONS.

The appropriation for the surveying of old subdivisions has been spent in making surveys of some of the old subdivisions in the District where there were no survey points available. In connection with this work 475 monuments have been planted at block corners, which will in future greatly facilitate surveys in these subdivisions. I have asked that this appropriation be continued in the next District appropriation bill.

STREET EXTENSION.

Transmitted herewith is report of the assistant surveyor on all matters relating to bills prepared for Congress and condemnation cases for streets and alleys. This will show a large increase in the number of alley cases filed, being 24 in the past year against 15 for the year previous. The verdicts in 14 cases have been confirmed. Twenty-two cases for parks and streets have been filed during the past year, many of them requiring a great amount of labor and care in their preparation. The cost of

land and improvements condemned for alley purposes during the past year was $18,464.84, and the cost of land and improvements for streets $355,176.76.

I have asked for a small increase, as shown in my annual estimates, believing that the increasing work of this office justifies this recommendation. The work of this office requires prompt and efficient service, it being a class of work upon which improvements are dependent, and delay in the execution of which would retard transfers of property and building operations.

I take this occasion to express my appreciation for the faithful and efficient service rendered by the employees of this office during the past year.

Very respectfully,

MELVIN C. HAZEN,
Surveyor, District of Columbia.

Capt. MARK BROOKE,
Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.

STREET EXTENSION DIVISION.

SURVEYOR'S OFFICE, DISTRICT OF COLUMBIA,
Washington, September 5, 1912.

SIR: I have the honor to submit herewith report of the operation of the street extension division for the fiscal year ended June 30, 1912.

Reports, maps, and bills to be sent to Congress were prepared on the following projects:

Acquisition of Fort Drive and Fort Dupont sites for parks, and widening of connecting highway (Alabama Avenue).

Road and parkway along Anacostia River (above Anacostia bridge).

Opening streets in the Barry farm.

Widening of First Street NE., along squares 675, 676, and 677.

Extension of Girard Street NW., to Fifteenth Street.

Highway plan changes:

Bill giving commissioners, District of Columbia, general authority to change plans.

Widening and extension of Lovers Lane and Rock Creek Drive.

Acquisition of Mount Hamilton site for a park.

Extension of Piney Branch Park.

Widening and extension of Spring Road, Georgia Avenue to Twentieth Street NW.

Street extension:

Bill giving commissioners, District of Columbia, general authority to institute condemnation proceedings.

Addition to playgrounds in square 1273.

Reports and maps prepared on the following bills referred by Congress to the commissioners, District of Columbia:

Widening Benning Road from Fifteenth Street NE., to Anacostia River.

Extension of Fourteenth Street and Alaska Avenue NW.

Extension of Irving Street NE., between Eighteenth and Twentieth Streets.

Extension of Keokuk Street to Rock Creek Park.

Extension of Oak Street NW., to Fourteenth Street Road.

Acquisition of squares south of Pennsylvania Avenue.

Twenty-four alley condemnation cases have been prepared and filed during the year, a number far in excess of the work of any previous year. The prosecution of these cases has been hampered during the latter part of the year by a decision of the court requiring that the Commissioners of the District of Columbia submit to the court, prior to the swearing of the jury and the taking of testimony, proof as to the necessity of the alley in question. An appeal has been taken from this decision, and pending the result a number of alley condemnation cases are being held in abeyance.

Street extension condemnations undertaken have, in nearly all cases, been brought to a successful conclusion, an exception being the important case of the road along the Anacostia River, the jury failing to find the benefits necessary to comply with the act of Congress. An effort will be made during the coming year to complete this case by a new proceeding, from which some of the most expensive land included in the first proceeding will be omitted.

Submitted herewith is a table showing action taken on all condemnation cases filed during the year, and action on cases previously filed, where such cases were not finally disposed of prior to July 1, 1911.

Very respectfully,

J. B. SHINN,
Assistant Surveyor, District of Columbia.

The SURVEYOR, District of Columbia.

Condemnation cases.

STREET EXTENSIONS AND PARKS.

Location.	Court Docket No.	Act No.	Act approved.	Case filed.	Verdict filed.	Verdict.		Action on verdict.
						Damages.	Benefits.	
Girard Street NW. west of Fifteenth Street	812	279	Feb. 26, 1909	Apr. 9, 1909	July 21, 1909			Not confirmed. Case dismissed Dec. 8, 1911.
Minnesota Avenue, Pennsylvania Avenue to Sheriff Road.	823	267	Feb. 25, 1909	May 22, 1909				Final action pending.
Building restriction line, Thirteenth Street between Park and Monroe Streets.	880			June 13, 1910	Dec. 12, 1911	$7,175.33	$7,896.88	Confirmed Apr. 6, 1912.
Extension of Belmont Road and Waterside Drive.	895	73	Mar. 2, 1910	Aug. 31, 1910	May 29, 1911	74,149.47	34,451.00	Confirmed Dec. 8, 1911.
Extension of Nineteenth Street NW	921	184	May 18, 1910	Nov. 17, 1910	Aug. 28, 1911	24,633.73	25,971.88	Confirmed Oct. 27, 1911.
Widening of First Street NE	922	207	June 11, 1910	do	July 17, 1911			Final action pending.
Road along Anacostia River	926	170	May 10, 1910	Dec. 9, 1910	June 19, 1912	51,367.19	3,045.62	Exceptions to verdict filed by District of Columbia.
Widening of Cedar Street NW	927	185	May 18, 1910	do	May 23, 1911	9,300.76	None.	Confirmed Sept. 22, 1911.
Extension of Massachusetts Avenue NW	935	228	June 22, 1910	Jan. 23, 1911	Nov. 10, 1911	46,539.66	47,725.96	Confirmed Dec. 7, 1911.
Extension of Reno Road NW	956	326	Dec. 20, 1910	Apr. 28, 1911	Dec. 15, 1911	10,046.26	10,543.36	Confirmed Jan. 16, 1912.
Extension of Seventeenth Street NE	958	489	Mar. 4, 1911	May 8, 1911	July 7, 1911	3,344.98	3,750.24	Confirmed Aug. 25, 1911.
Extension of Thirteenth Street NW	963	405	Feb. 20, 1911	June 16, 1911	Feb. 5, 1912	6,369.60	6,902.12	Confirmed Apr. 6, 1912.
Interior Park, square 534	965	441	Mar. 2, 1911	June 26, 1911	July 10, 1912			Continued to Oct. 14, 1912.
Extension of Van Buren Street NW	966	450	Mar. 3, 1911	July 14, 1911	Dec. 20, 1911	2,454.91	2,915.07	Confirmed Jan. 16, 1912.
Extension of Q Street NW	969	441	Mar. 2, 1911	Aug. 26, 1911				Final action pending.
Zoo Park entrance from Sixteenth Street and Columbia Road.	970	441	do	Sept. 14, 1911	May 23, 1912	137,022.69	92,048.06	Confirmed June 14, 1912.
Land to connect Belmont and Fifteenth Streets NW.	981	441	do	Nov. 10, 1911				Condemnation not completed; land acquired by purchase.
Extension and widening of Colorado Avenue and Kennedy Street.	990	1	June 30, 1911	Nov. 28, 1911	Apr. 4, 1912	34,139.37	34,675.55	Confirmed May 23, 1912.
Widening of Bladensburg Road	1001	4 228	Jan. 9, 1907 Feb. 16, 1909	Jan. 23, 1912				Final action pending.
Minor street, square 2888	1024			Apr. 1, 1912				Do.
Building line, Columbia Road between Fifteenth and Sixteenth Streets.	1025			Apr. 11, 1912				Do.
Minor street, square 2895	1037			May 31, 1912				Do.
Minor street, square 16	1039			June 12, 1912				Do.
Extension of Lamont Street NW	1040	93	Mar. 1, 1912	June 14, 1912				Do.
Minor street, square 3532	1041			June 19, 1912				Do.

ALLEYS.

Square 32	817			Apr. 30, 1909				Case dismissed by petition of District of Columbia Dec. 1, 1911.
Square 2615	866			Mar. 22, 1910				Final action pending.
Square 2863	886			July 28, 1910	May 15, 1911	2,025.58	2,265.31	Confirmed Nov. 13, 1911.
Square 100	942			Mar. 2, 1911	June 9, 1911	1,200.00	1,428.48	Confirmed July 12, 1911.
Square 2846	950			Apr. 4, 1911	June 10, 1911	675.01	913.19	Do.
Square 970	959			May 15, 1911				Case discontinued Sept. 21, 1911.
Square 2563	960			do	Jan. 2, 1912	4,880.43	5,220.21	Confirmed Feb. 12, 1912.
Square 2527	961			May 22, 1911				Case dismissed by petition of District of Columbia Jan. 12, 1912.
Square 2843	971			Sept. 21, 1911				Case dismissed by petition of District of Columbia Nov. 6, 1911.
Square 518	972			do	Jan. 26, 1912	1,506.95	1,728.00	Confirmed Mar. 7, 1912.
Square 970	973			do	do	1,076.43	1,333.36	Confirmed Mar. 1, 1912.
Square 794	974			Oct. 27, 1911	Jan. 9, 1912	196.75	411.80	Confirmed Feb. 12, 1912.
Square 812	975			do	Jan. 4, 1912	555.00	779.73	Do.
Square 111	976			do	Feb. 7, 1912	513.00	748.08	Confirmed Mar. 11, 1912.
Square 2857	977			Oct. 31, 1911	Jan. 11, 1912	1,350.00	1,564.93	Confirmed Feb. 12, 1912.
Square 2843	988			Nov. 27, 1911				Final action pending.
Square 32	998			Dec. 29, 1911				Case dismissed by petition of District of Columbia Feb. 23, 1912.
Square 3019	1002			Jan. 24, 1912	Mar. 14, 1912	218.64	419.06	Confirmed Apr. 15, 1912.
Square 2847	1004			Jan. 30, 1912	Mar. 28, 1912	83.29	291.33	Confirmed May 1, 1912.
Square 2621	1006			Feb. 6, 1912				Final action pending.
Square 2885	1008			Feb. 9, 1912	May 27, 1912	2,185.24	2,510.10	Confirmed June 27, 1912.
Square 2858	1019			Mar. 19, 1912	June 4, 1912			Not yet confirmed.
Square 2829	1020			Mar. 21, 1912	June 27, 1912			Do.
Square 2501	1021			Mar. 22, 1912	May 28, 1912	1,998.52	2,230.00	Confirmed June 28, 1912.
Square 757	1022			Mar. 25, 1912				Discontinued by petition of District of Columbia Apr. 13, 1912.
Square 910	1026			Apr. 12, 1912				Final action pending.
Square 2897	1027			do	June 13, 1912			Not yet confirmed.
Square 2830	1029			Apr. 26, 1912	June 26, 1912			Do.
Square 2551	1031			May 10, 1912				Final action pending.
Square 3049	1038			June 6, 1912				Do.
Square 377	1042			June 21, 1912				Do.
Square 2892	1043			June 24, 1912				Do.

REPORT OF THE SUPERINTENDENT OF TREES AND PARKINGS.

WASHINGTON, D. C., *August 10, 1912.*

SIR: I have the honor to submit herewith my twenty-seventh annual report, dealing with the operations of the trees and parkings office during the fiscal year ended June 30, 1912.

The systematic planting of young trees again continued to be the most important feature in our work, the necessity being recognized to shade all improved streets as rapidly as the surface conditions justify it. Three thousand eight hundred and twenty-four trees were transplanted from the nurseries to their permanent position on the streets, a slight decrease over last year's record of 3,869. It is evident that there would have been an increase in this work had it not been for the late spring and the unusual severity of the past winter. This last condition caused the ground to be frozen thoroughly until about the 1st of March, thereby preventing holes from being prepared for the reception of young trees, and delaying planting operations until about the 1st of April. Three thousand five hundred and ten of the total number planted were set at the curb line to extend the system and to fill the vacancies as they occurred. Three hundred and ten were planted in parking rows, a majority of which were set out on newly dedicated streets in Chevy Chase Heights. In addition, four trees were planted in public playgrounds. This planting continues to be a costly item in view of the existing high price of labor and materials of all kinds and the necessity for longer hauls due to the rapid growth of the city.

TREES PLANTED.

Fall season.		*Spring season.*	
Elms	124	Ash	88
Gingkos	83	Elms	168
Lindens	25	Gingkos	173
Maples:		Lindens	13
Norway	594	Maples:	
Sugar	206	Norway	552
Oaks:		Silver	11
Pin	315	Sugar	78
Red	139	Oaks:	
Sycamores	287	Pin	212
		Red	300
		Sycamores	456
Total	1,773	Total	2,051

The seed beds in the city nurseries are well stocked with varieties used for street planting, and because of the large stock already in the nursery rows no seedlings were transferred thereto.

The systematic trimming of street trees commenced at the point of discontinuance last year at Tenth Street east, and progressed as far east as the Anacostia River, with the exception of a small portion of Eleventh and Twelfth Streets. Incidentally, it was possible to head back a large number of silver maples which had grown too tall for safety and whose dead branches rendered them a menace to the public. A force of men was kept continually on the work of attending to individual requests for trimming trees because of dense shade, objectionable limbs, etc. These requests were given as prompt attention as possible.

The following table shows the kinds and number of trees removed during the year. Careful attention is always given to removal requests, and many growths are saved by suggested changes in driveways, vaults, etc. In the case of dead trees removed, the table gives the causes of their death as accurately as can be ascertained. Particular attention is called to the increased number of trees which were destroyed by the leakage of illuminating gas, and it is to be regretted that the local gaslight companies do not take early action in making repairs to their mains when leaks are reported and thereby prevent other trees in the immediate vicinity of the affected ones from being killed.

Statement of trees removed during the year.

Ailanthus	2
Apple	1
Ash	4
Catalpa	11
Cedar	6
Cypress	1
Elm	94
Gingko	19
Horse-chestnut	4
Hickory	2
Linden	70
Locust	11
Magnolia	1
Maples:	
Black sugar	2
Norway	393
Red	28
Silver	862
Sugar	154
Sycamore	1
Mulberry, paper	8
Negundo	57
Oaks:	
Black	4
Pin	130
Pyramidal	2
Red	59
White	22
Osage orange	2
Peach	2
Pine	3
Poplars:	
Aspen	42
Athenian	10
Balsam	9
Carolina	269
Lombardy	11
Tulip	23
Sweet gum	1
Sycamore	325
Willow	1
Total removed	2,646

Causes of removals or deaths.

Dead, decayed, and dangerous	1,462
Inferior and condemned varieties	476
To relieve excessive shade	47
Street repairs, driveways, buildings, etc	379
Storms and accidents	269
Improvement of alleys	9
To accommodate lamps	4
Total	2,646

Of the dead trees included in the above it was ascertained that 320 were destroyed by illuminating gas (184 more than were killed the previous year), 4 by sewer gas, 3 by electricity, 24 by horses, 294 by drought, 18 by salt water, 27 by the mutilation of roots, 31 by scale and other insects, 6 by oily straps, 2 by being girdled, 27 by being filled around, 157 by damp condition of soil, 1 by lime. The remaining were unexplained.

Curb trees removed	2,389
Parking trees removed	200
Trees in sidewalks removed	29
Trees in school grounds removed	9
Trees in alleys removed	8
Trees in roadways removed	11
Total	2,646

The work of spraying the street trees of the city during the past fiscal year progressed very satisfactorily. Another 400-gallon sprayer, with 10 to 14 horsepower, 4-cylinder special type, Buffalo gasoline engine was purchased from the FitzHenry-Guptill Co., of Boston, Mass., at a total cost of $1,365, equipped. Two large machines were then available for immediate use as soon as the insects made their appearance on the trees. The splendid results obtained during the past year in destroying leaf-eating insects may be reflected in the present fine condition of the trees throughout the city. Special attention is called to the fact that the elms on the streets during the past fiscal year required but one spraying, this probably because of the efficient work performed in this line during the previous year. It is believed that the elm-leaf beetle which infests this species has been practically exterminated for the time being.

The spraying work was not confined to the street trees only, but extended to public parks and other grounds as well, this office complying with requests from the Superintendent of Public Buildings and Grounds, National Training School for Boys, and the Columbia Institution for the Deaf to spray trees coming under their supervision, the expense of which was defrayed by the applicants.

The following table shows the extent of the spraying during the year:

Street trees sprayed.

Elms	9,181
Lindens	5,075
Maples:	
Norway	674
Silver	1,732
Sugar	38
Negundos	305
Oaks, pin	285
Sycamores	1,211
Others	5
	18,506
Various school yards	26
Total	18,532

Average cost for spraying each tree (labor and materials), $0.0675.

Public parks and grounds.

Washington Circle.
Lafayette Square.
Judiciary Square.
Lincoln Park.
Dupont Circle.
Garfield Park.
McPherson Square.
Farragut Square.
White Lot.
Executive Mansion.
Franklin Park.
Grant Circle.
United States Marine Barracks.
Columbia Institution for the Deaf.
National Training School for Boys.

Little progress was made upon the work of cultivating young street trees, principally because of a severe storm which visited the city, littering the streets with fallen trees and broken branches and thereby rendering necessary the transfer of the entire force to the work of clearing away the wreckage. This storm occurred at a time when the appropriation was practically exhausted, which prevented the office from giving the prompt attention required in the case of such emergencies. It became necessary to cover the entire tree-planted district, to stake, brace, and strap young trees which would have been destroyed in many cases by lack of attention.

The work of mowing parkings progressed fairly well, it being deemed necessary to rid the city of as many weeds as possible. Attention was also given to the maintenance and mowing of grass in front of the District building, Union Station, Market House, Ashmead Place, public convenience station at Seventh and Pennsylvania Avenue NW., the parking around Washington Circle, and at Seventh and Louisiana Avenue NW.

The regulation of terrace heights throughout the District is proceeding satisfactorily, in spite of the fact that several applicants violated their permit by disregarding the terms set forth therein and constructing terraces of a height exceeding that allowed by this office. There were 944 applications received durng the year, an increase of 174 over the preceding year. In determining action thereon, about 708 inspections were made, equaling about three-fourths of the total applications. Owing to the great distance to be covered in visiting these locations, the present method of transportation is inadequate to give this work the attention it requires, and it often becomes necessary to defer action for several days, which gives rise to criticism. If the office were equipped with an automobile for these and other inspections, much valuable time would be saved and the efficiency of the service much improved.

A brief summary of the work performed by the office force is as follows:

The writing and execution of 578 inspections, with an additional 708 terrace inspections; issuance and execution of 727 orders, necessitating the visiting of 2,456 locations; 447 official files acted on, involving the writing of 592 indorsements; 21 requests to Surface Division for paving, plumbing, etc.; forwarding of 28 pay rolls and special vouchers; 93 requisitions for supplies; 13 transfer vouchers; 158 supply bills were approved, recorded, and transmitted to the proper authority; superintendent's recommendations originating here, 78; gas reports forwarded, 28, covering 131 separate locations; 195 letters mailed from this office to private individuals; 16 car ticket and stamp reports forwarded; preparation and forwarding of quarterly and annual property returns.

Summary.

Trees in streets, parkings, sidewalks, school yards, and playgrounds at close of fiscal year 1911		99,609
Trees planted during fiscal year 1912	3,824	
Trees removed during fiscal year 1912	2,646	
Net increase during 1912		1,178
Trees in streets, parkings, sidewalks, school yards, and playgrounds at close of fiscal year 1912		100,787
In addition to these, 19 were removed from alleys and roadways, but did not diminish number included in official count.		
Curb trees on streets at close of fiscal year 1911		98,746
Net increase of curb trees during fiscal year 1912		1,121
Curb trees on streets at close of fiscal year 1912		99,867
Mileage of trees at close of fiscal year 1911		561.04
Increase of mileage of trees, fiscal year 1912		6.36
Mileage of trees at close of fiscal year 1912		567.40
Mileage of tree-planted streets, close of 1911		280.52
Increase of mileage of tree-planted streets, 1912		3.18
Mileage of tree-planted streets, close of 1912		283.70

NOTE.—Mileage is figured on the basis of 352 trees per mile.

Expenditures.

[Streets, District Columbia, 1911-12, parking commission.]

Labor:			
Extermination of insects, spraying for—			
Tussock moth (lindens, sycamores, Norway and silver maples)	$119.51		
Webworm (lindens, sycamores, Norway and silver maples)	85.51		
Elm-leaf beetle (American elm)	141.38		
Extermination of insects, burning egg masses of Tussock moth (silver maples, lindens, etc.)	17.50		
		$363.90	
By balance of appropriation forwarded to 1912			$204.70
By repayments, fiscal year 1911-12			159.20
		363.90	363.90

[Streets, District of Columbia, 1912, parking commission.]

Labor:		
Clerical and inspection work	$2,267.94	
Military duty with National Guard	3.00	
Storm damage	1,461.38	
Cultivating young street trees	2,513.04	
Improvements, care and mowing of parkings	2,706.74	
Miscellaneous repairs to boxes, etc	539.57	
Maintenance of nurseries (making 4,000 boxes)	2,461.92	
Extermination of insects	157.18	
Removing dead, decayed, and dangerous trees	3,387.05	
Trimming street trees	4,192.43	
Planting trees (including lifting trees in nursery and digging of holes)	6,444.58	
Yard maintenance	1,632.19	
Cementing	8.00	
Labor Day payments to laborers	100.50	
		$27,875.52

Materials, supplies, miscellaneous repairs, etc.:			
Buggy and wagon findings and repairs	$32.02		
Car tickets	5.00		
Drugs, horse medicines, etc	23.70		
Electric current	20.04		
Fertilizer and grass seed	167.15		
Forage	2,227.20		
Iron and steel, horseshoes, pads, etc	296.49		
Fuel	67.16		
Furniture and office supplies	5.77		
Leather straps	417.75		
Lumber for boxes (stakes included)	2,273.05		
Lumber for miscellaneous purposes	17.31		
Nails, screws, bolts, etc	69.00		
Paints, oils, and glass	317.89		
Rope	41.15		
Spraying apparatus (including hose)	1,493.50		
Spraying materials, engine equipment, etc	401.27		
Soil	64.80		
Stable supplies, equipment for teams, etc	118.32		
Stationery and printing	71.18		
Tools and agricultural implements	193.84		
Telegram and telephone calls	.30		
Tree guards (ornamental, iron)	2,454.90		
Trees, cedar	15.00		
Wagons, dump	229.00		
Sundries	29.12		
		$11,045.82	
Charges against appropriation:			
Paving tree spaces	184.94		
Plumbing	21.25		
Removing broken limbs from county roads	40.63		
Repairs to E Street nursery buildings	478.73		
		725.55	
By appropriation, fiscal year 1912			$37,500.00
By repayments, fiscal year 1912			2,170.58
To balance appropriation unexpended		23.69	
		39,670.58	39,670.58

[Streets, District of Columbia, 1912-13, parking commission.]

Labor:			
Extermination of insects, spraying for tussock moth (lindens)	$49.30		
Extermination of insects, clipping branches of caterpillar nests (lindens, Norway and silver maples, sycamores, etc.)	91.00		
		140.30	
By appropriation, fiscal year 1912–13			5,000.00
To balance appropriation forwarded to 1913		4,859.70	
		5,000.00	5,000.00

Expenditures from miscellaneous appropriations:

[Exclusive of parking commission.]

	Direct charge.	Through repayment.
Miscellaneous trust fund deposits	$5,117.97	$1,769.88
Maintenance of public crematorium, District of Columbia, 1912	48.37	.....
Maintenance, etc., playgrounds, District of Columbia, 1912	.....	8.00
Public schools, District of Columbia, 1912	9.75	12.86
Improvements and repairs, District of Columbia, 1912:		
Phelps Place NW., pave	4.88	.....
Seventeenth Street NW., B to E Streets—I and G Streets	11.25	.....
Georgetown schedule	9.75	.....
Repairs to streets	753.64	379.84
Assessment and permit work	916.74	.....
	6,872.35	2,170.58

Sums expended during the year for employment of per diem employees, paid from appropriation "Streets, District of Columbia, 1912, parking commission."

1 inspector, 146¾ days, at $3.75	$550.31
1 inspector, 83 days, at $3.25	269.75
1 copyist, 301½ days, at $3	904.50
Total	1,724.56

Sums expended during the year for the purchase and maintenance of horses, carts, and wagons, together with amounts paid for cart and wagon hire.

[NOTE:—These items included in material list.]

Horses, forage, wagons, and miscellaneous equipment and repairs		$2,606.54
Cart hire, 1,713 plus days, at $2.25 per day	$3,855.95	
Wagon hire, 681¾ days, at $4 per day	2,727.00	
		6,582.95
Total		9,189.49

Respectfully submitted:

T. LANHAM,
Superintendent of Trees and Parkings, District of Columbia.

Capt. MARK BROOKE,
Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.

SUBSURFACE AND BUILDING DIVISION.

Maj. EDWARD M. MARKHAM.

Corps of Engineers, United States Army, Assistant to the Engineer Commissioner, in Charge.

WATER DISTRIBUTION	W. A. MCFARLAND, *Superintendent Water Department.*
WATER RATES	G. W. WALLACE, *Water Registrar and Chief Clerk, Water Department.*
SEWER CONSTRUCTION AND MAINTENANCE	ASA E. PHILLIPS, *Superintendent of Sewers.*
BUILDING INSPECTION	MORRIS HACKER, *Inspector of Buildings.*
Plumbing plans and inspection	A. R. MCGONEGAL, *Inspector of Plumbing.*
BUILDINGS AND REPAIRS TO BUILDINGS	SNOWDEN ASHFORD, *Municipal Architect.*
GAS AND METER INSPECTION	E. G. RUNYAN, *Inspector of Gas and Meters.*
PERMITS	H. M. WOODWARD, *Permit Clerk.*
AUTOMOBILE BOARD	H. M. WOODWARD, *Secretary, Automobile Board.*
ELECTRICAL DEPARTMENT	W. C. ALLEN, *Electrical Engineer.*

REPORT OF ASSISTANT IN CHARGE.

OFFICE OF THE ENGINEER COMMISSIONER
OF THE DISTRICT OF COLUMBIA,
Washington, October 1, 1912.

COLONEL: I have the honor to forward herewith reports of the divisions of the engineer department under my charge, for the fiscal year ended June 30, 1912, being the reports of the superintendent of the water department, the superintendent of sewers, the inspector of buildings, the municipal architect, the inspector of plumbing, the inspector of gas and meters, the permit clerk, the automobile board, and the electrical engineer.

EDWARD M. MARKHAM,
Major, Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner.

Lieut. Col. WM. V. JUDSON,
Corps of Engineers, U. S. Army,
Engineer Commissioner, District of Columbia.

REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

WASHINGTON, D. C., *September 10, 1912.*

SIR: I have the honor to submit the following report of the operations of the water department for the year ending June 30, 1912:

The cash collections for the year amounted to $682,120.43, an increase of $48,667.73 over those of the year preceding.

Advances by Congress for special projects, unexpended balances from previous allotments, deposits for special work, etc., amounting to $197,639.81 bring the total available funds for the year up to $879,760.24.

Expenditures for all purposes amounted to $769,530.18, leaving a nominal balance of $110,230.06 at the close of the year as compared with a nominal balance at the end of the last fiscal year of $87,198.64. This increase is due in part to advances made by Congress for certain special water main extensions in Congress Heights, Kenilworth, and intermediate points. For these special projects which would ordinarily have been paid from water revenues, Congress appropriated $151,100, payable half from the United States Treasury and half from the general revenues of the District of Columbia. The cost of this work was $140,335.94, or $10,764.06 under the appropriation.

By legislation enacted in the District appropriation act for the fiscal year 1913, one-half of the amount expended, or $70,167.97, is to be repaid to the United States from the water revenues in annual installments of $20,000, commencing with the fiscal year beginning July 1, 1912. The other half, $70,167.97, which was appropriated from the general revenues of the District, Congress did not require to be repaid from the water funds.

This nominal balance existing at the end of each year serves as a working fund in order to carry on work authorized by Congress at the beginning of the fiscal year in advance of water revenues due during the year. The necessity of such a working fund is apparent, and it also provides an insurance fund which is immediately available in case of a serious emergency such as an accident which might easily endanger the entire water system. The ordinary nominal balance is created by the postponement of certain necessary work of replacement in the water-distribution system, but this balance was augmented during the year, as stated above, by advancements from the United States Treasury which must be repaid in four years, beginning July 1, 1912, at the rate of $20,000 per annum, and it is not probable that further advances will be made for the extension of water mains.

The most important main extension work done during the year was the completion of the lines supplying Congress Heights, Kenilworth, and intermediate points.

The total length of water mains of all sizes laid during the year was 147,785 feet, or 28 miles, a decrease of 4,281 feet from the amount laid during the preceding year. Total length of mains of all sizes now in use, 550 miles.

The mean daily consumption of water by the entire system was 61,990,000 gallons, which, on a basis of 346,000 population, gives a per capita rate of 179, an increase of 1 gallon per capita over the preceding year. Weather conditions were abnormal, a dry and very hot summer being succeeded by an extremely cold winter.

The installation of water meters was continued during the year, about 5,000 having been placed, as shown in detail in the report of the water registrar herewith.

Meters on domestic-service pipes are placed and maintained at the expense of the water department, and 5,000 a year, costing about $60,000, are as many as could be afforded under then existing rates without unduly hampering other necessary work. To complete the metering of the District by placing only 5,000 a year would require over 20 years, whereas it is becoming increasingly evident that to avoid disaster the work must be completed much sooner.

The commissioners, therefore, under authority vested in them by act of Congress, have directed an increase in the rates (by meters from 4 to 5.35 cents per 1,000 gallons), which is estimated to produce enough revenue to permit the completion of the work of metering in about six years.

Contract has been made for 10,000 meters, which will be placed during the current fiscal year.

A detailed statement of routine work accomplished is given in the accompanying tables, and much data of interest will be found in the reports of the several divisions.

A summary of the duties assigned to each division of the department, and of the general results accomplished, follows; each division and subdivision report is in general written by the head of that division.

DIVISION A.—*Maintenance and extension of distribution system.*

[J. S. GARLAND, assistant engineer, in charge.]

SUBDIVISION A2.—*General engineering.*

The work of this subdivision consists in the preparation of plans and estimates for water-main extensions and allied constructions, in all field-work and records incident to the carrying out of these plans, and in engineering work of a miscellaneous character.

The subdivision is in charge of Mr. D. W. Holton, assistant engineer.

The work accomplished during the year included:

Bimonthly records of pressures on 100 fire hydrants distributed over the entire water-service area in the District.

Records of other fire-hydrant pressures	46
Investigation of water-service complaints	7
Surveys for the location of proposed—	
New valves	30
Meter vault	1
Public hydrants	3
Sanitary fountains	3
Horse fountains	6
Fire hydrants	91
Drains for fire hydrants, public hydrants, and horse fountains	23

Surveys for proposed rearrangement of mains, by-passes, and connections	32
Surveys for—	
Lowering old water mains	7
Proposed private water service, 3 to 6 inch	8
The location of proposed new water mains	303
Which leveling was necessary	211
Leveling to establish grades for fire hydrants, drains, etc	26
Fire-hydrant elevations established	435
Finished field notes of completed work turned in	644
Number of visits to work in progress	2,093
Location of old mains, buildings, etc., taken and turned in	31
Preliminary surveys	101

This work consists of making a rough survey of the streets in which an application for an extension of water main is made, staking out proposed line, running levels, computing cuts and fills that would be necessary to bring the street to the approved grade. This work is done in advance of the report to the superintendent on the water-main project, and the condition of the street as far as grading is concerned is the basis of a recommendation for or against the laying of the water main.

Total number of feet of water main of various sizes ranging from 3 to 48 inches in diameter, inclusive, laid, was 147,785, which represents approximately the total number of feet of water main lines surveyed.

All survey, field, and record sheets of proposed and completed work were filed and indexed.

The work of installing new fire hydrant pressure cards is up to date.

Samples of soil from the water department trenches in city and county have been collected, indexed, and recorded.

Total number of samples obtained to the end of the fiscal year is 1,006. Elevation of point at which samples were taken was established, and its location with reference to street intersections was made, both of which were recorded and indexed.

This subdivision prepares weekly schedules of work which is to be assigned to the several foremen laying water mains. It is designed to have these schedules show two or three jobs in advance.

The work of adjusting water mains and valves on the line between water service areas in the southwest, southeast, and northeast sections of the city was practically completed.

Plats showing proposed changes in water mains and valves in the line between service areas in the northwest sections of the city were made.

This branch examines all projects for the laying of new water mains which have been ordered, arranges the location of valves, blow-offs, air valves, and fire hydrants, and prepares bills of material required for the work, one copy of which is furnished the storekeeper and the other to the foreman. This bill of material provides for all valves, fire hydrants, special castings, blow-offs, valve casings, cement rings, lead and jute.

All estimates for the furnishing of cast-iron water pipe and special castings are prepared by this subdivision.

Important trunk water mains were laid as follows:

The completion of the 20-inch main to Congress Heights, authorized by congressional appropriation, continuing from the south line of the United States Government Hospital for the Insane, along Nichols Avenue southward to First Street SE. The laying of this main has opened quite an extensive area, considerably built up, and by the subsequent laying of lateral 8 and 12 inch water mains, affords water service and fire protection to nearly all buildings in Congress Heights. A trunk water main, 20 inches in size, was laid in Anacostia Road from Pennsylvania Avenue SE. to Benning, D. C., and in Minnesota Avenue to Gault Street, at this point reducing to 16 inches in size, and continuing along Minnesota, Deane, and Kenilworth Avenues to the District line through the subdivision of Kenilworth, D. C.

Another trunk water main was laid in Benning Road from Anacostia Road westward to the Benning Bridge over the Eastern Branch of the Potomac River.

These mains are ample in size to afford water supply and fire protection to Benning and Kenilworth Subdivisions. One special feature of the water main in Benning Road is that, owing to the shallowness of the covering over the top of the railroad company's culvert, which crosses under the tracks at their intersection with Benning Road, the water main was deflected and suspended by metal hangers within the culvert.

Incidental to the opening up of the subdivision of Massachusetts Avenue Heights the work of laying water mains was begun but not completed during the fiscal year. The most important main, 16 inches in size, was laid in Wisconsin Avenue from

Woodley Road to Massachusetts Avenue. This main joins the existing 20-inch water main from the Reno Reservoir at Woodley Road, thus affording a direct water main from the reservoir to this subdivision. From this 16-inch water main, 12-inch laterals were extended, one through the north side of Massachusetts Avenue to Observatory Circle, and another in the west side of Wisconsin Avenue south of Massachusetts Avenue to Edmunds Street. Another 12-inch water main laid in Thirty-second Street joining the 12-inch main in Woodley Road and extending south to Garfield Street, was laid. Eight-inch water mains were laid in various streets of this subdivision lying south of Massachusetts Avenue. The trunk water mains described above are only for the third high-service area. However, another 12-inch trunk water main was laid in Massachusetts Avenue from California Street to W Street. This main supplies the second high service area of this subdivision.

Other 12-inch trunk water mains were laid as follows:

In Monroe Street, between Fourteenth and Seventeenth Streets NW. This main, connecting with the 36-inch trunk water main in Fourteenth Street, was laid for the betterment of the water service area west of Fourteenth Street and north and south of Monroe Street.

In W Street between North Capitol and First Streets NW. a main was laid to replace existing water main which, owing to an excessive fill, was necessarily abandoned. This main is one of the principal lines to Brookland and Woodridge subdivisions.

In Illinois Avenue between Farragut and Hamilton Streets NW. a main was laid to replace existing water main which was laid previous to an extensive fill.

In Alabama Avenue between Nichols Avenue and Tenth Place SE. a main was laid forming a direct feed from the 20-inch water main in Nichols Avenue to the eastern section of Congress Heights.

In Eighteenth Street between Virginia Avenue and D Street, Virginia Avenue between B and Eighteenth Streets, and in B Street between Virginia Avenue and Seventeenth Street a 12-inch water main was necessary for fire protection and the betterment of the water service west of Seventeenth Street and north of B Street NW.

In Pennsylvania Avenue between Twenty-eighth Place and Thirtieth Street SE. a section of 12-inch trunk water main was laid.

In Ord Place between Kenilworth Avenue and Forty-fourth Street NE. a part of the system for the water supply of Kenilworth, D. C.

SUBDIVISION A3.—*Care of property.*

The work of this subdivision consists in receiving, inspecting, recording, storing, and issuing all material bought for the use of all branches of the department, preparing quarterly returns of unexpended property, and in preparing lists of unserviceable property for condemnation and sale.

The property office, located in the District pumping station on Bryant Street, is open at all times, day and night. Mr. S. Q. Kline, storekeeper, has charge, and has regularly under his orders 1 assistant storekeeper, 5 skilled laborers, 1 pipe inspector, 8 laborers, and 2 watchmen.

SUBDIVISION A5.—*Care and recording of valves, fire hydrants, street hydrants, etc., and care of reservoirs.*

This subdivision is charged with caring for and making and maintaining complete records of all valves, fire hydrants, street hydrants, etc.; with the execution of miscellaneous plumbing and with general supervision of Brightwood and Reno Reservoirs; it is in charge of Mr. Humphrey Beckett, from whose report the following summary is taken:

Valves operated and cleaned	10,409
Valves packed	428
Valves fitted with new key nut	5
Valves inspected to check numbers	307
Number plates placed on casings	909
Casings cleaned	1,261
Valves uncovered	34
Valves fitted with new stems:	
8-inch 2-way	2
6-inch 2-way	10
4-inch 2-way	2
3-inch 2-way	9
6-inch 4-stem	2
6-inch 3-stem	1
6-inch 4-way	22
6-inch 3-way	7
2-inch 2-way	1

4-stem valves fitted with new heavy stems and gates complete	21
3-stem valves fitted with new heavy stems and gates complete	7
Valves from which gates were removed	2
By-pass valves installed	2
By-pass valves repaired	1
Valves fitted with new gland	2
Air valves installed	7
Air valves abandoned	8
Air valves repaired	3
Indicator posts erected	43
Indicator posts replaced	9
Indicator posts painted	110
Indicator posts numbered	101
Caps replaced on posts	5
Indicator posts abandoned	1
Valve locations made at indicator posts	99
Fire hydrants inspected	34,184
Fire hydrants repaired	1,612
Fire hydrants lubricated	4,376
Fire hydrants reversed	8
Fire hydrants from which ice was removed	118
Drinking fountains:	
Adjusted	1
Repaired	226
Cleaned	3,433
Flow regulated	138
Stop cocks replaced	13
Stop-cock boxes adjusted	2
Drinking fountains for animals:	
Erected (new location)	8
Abandoned	1
Replaced	2
Sanitary fountains:	
Erected (new location)	3
Erected in place of old	7
Repaired	36
Public hydrants:	
Erected (new location)	17
Elected in place of old	23
Abandoned	19
From which ice was melted	10
Adjusted	2
Repaired	229
Catch basins cleaned	4
Drains:	
Adjusted	1
Cleaned	6
Repaired	7
Wells cleaned	6
Pumps:	
Examined	250
Installed in place of old	6
Installed in new locations	2
Repaired	74
Adjusted	3
Fitted with new ladles	16
Removed	2
Street washers repaired	5
2-inch valves installed	4
Valves fitted with new packing box	3
Lead connections made for stock	165
New services installed	4
Services repaired	21
Services adjusted	20
Services reconnected	6

Smith cuts made:	
36 by 12 inches	1
20 by 8 inches	3
20 by 6 inches	1
12 by 8 inches	3
12 by 6 inches	1
8 by 4 inches	1
8 by 3 inches	1
6 by 6 inches	3
6 by 4 inches	1
6 by 3 inches	3
Intersection located	843
50-foot scale maps corrected owing to changes and new work	1,275
Index cards corrected owing to changes and new work	1,092
Index cards completed	238
Alley squares:	
Located	5
Completed	66
Cut-offs made owing to repairs or new construction	83
New mains charged	12
Valves:	
Inspected to check normal position	28
Restored to normal position	18
Capped for service boundary	15
Changes made in service boundary	4
Examinations made of valves reported out of order	6
Fittings strapped	32
Complaints of foul water investigated	9
Complaints of pressure investigated	12
Blow-offs flushed owing to complaints	171
Fire hydrants flushed owing to complaints	78

Flushed mains in Pinehurst subdivision 12 times during the year.

There were 2,553 written work orders received and recorded during the year.

An index record is kept of all valves operated, stating position in which valve is left and condition of same at time of operation.

Dividing lines between services were examined as follows:

First high	2
Second high	1
Third high	1
Fourth high	1

Miscellaneous work has been done as follows:

At Brightwood Reservoir: Each basin has been emptied and cleaned three times during year, a broken closet bowl in watchman's lodge was replaced.

At Reno Reservoir: Each basin has been emptied and cleaned once during year; valves in gate house were overhauled and fitted with brass-lined glands, yard toilet was repaired and new basin cock installed in watchman's lodge.

At Bryant Street Station: Repaired wagon washer, removed and replaced angle valves around lake, installed toilet for blacksmith shop, repaired toilet for blacksmith shop, repaired service pipe to blacksmith shop, repaired service pipe to wagon washer, reset three urinals in leakmen's shelter, laid 212 feet of service pipe and installed two ¾-inch hose connections at Camp Good Will, kept weeds and grass from around indicator posts, collected water twice each week from Reno and Brightwood Reservoirs for the chemist at the Filtration Plant.

SUBDIVISION A6.—*Laying mains, erecting fire hydrants, repairing leaks, etc.*

[Mr. S. H. HARDING, foreman in charge.]

All miscellaneous construction work, except of buildings and machinery, is done by this subdivision. For a statement of routine work accomplished attention is invited to Tables 3 and 4, appended hereto, where such work is described in detail. As will be noted, the total length of mains laid was about 28 miles.

The total number of leaks in water mains and appurtenances reported to this subdivision during the year was as follows:

	Trunk mains (16-inch and over).	Service mains (3 to 12 inch).	Service pipes.	Total.
Breaks	3	56	.....	59
Joints leaking	31	483	.....	514
Unclassified	2	45	1,730	1,777

In addition a large number of false reports were received and investigated. The leaks here referred to are such as showed on the surface of the ground and include none of those found by the regular underground survey carried on by Division F.

SUBDIVISION A9.—*Miscellaneous drafting.*

This subdivision is in charge of Chief Draftsman F. W. Albert; the following is from his report:

Drawings and tracings made	1,024
Projects made	225
Cards forwarded to the assessor	568
Communications written	532
Foreman's plats recorded	745
Files forwarded to the assessor	199
Locations recorded, no plat necessary	118

The above figures show a slight increase over those of the last fiscal year in the number of drawings and tracings made, communications written, foreman's plats recorded and files forwarded to the assessor. The number of men employed in the division is the same as last year.

The following report presents, in more detail, the work accomplished by this division during the year just ended:

Drawings and tracings were made of mechanical apparatus and of their appurtenances used in the office and shops, in the field, or at the pumping station, reservoirs, or lodges.

Among the most important drawings made by the division were: Remodeling gate house for Reno Reservoir; field wagon for water department engineers; plan for carrying 16-inch water pipe through culvert, Benning Road NE.; glass inclosure for stairway between water registrar's office and the first floor; stairway from vault in water registrar's office to the subbasement; proposed method of hanging 16-inch water main under the Sixteenth Street Bridge over Piney Branch; drawing showing altering of main doors for garage at Reno; fence and walks around Reno garage; water department valve; proposed fence around property yard, District pumping station.

Besides the maps and miscellaneous drawings made, there were some very interesting diagrams drawn by the drafting division. One of these was a tracing showing the water consumption in premises where meters had been installed by the District of Columbia during the fiscal year 1910–11. Another diagram shows the daily percentage of increase in water consumption for January, February, and March, 1912, over the average for December, 1911. There was also a chart made showing the curve of the water consumption for the month of November, 1903–1911, inclusive, the month when the daily consumption is supposed to be most uniform.

There were two maps and a plat showing reservoir levels, service elevations, etc., made for an instructor of physics at the McKinley Manual Training School who lectured on the water service of the District, and samples of all card records of water mains of the department, made for the superintendent of the water department of Sacramento, Cal.

One of the most important duties of the division is plotting accurately to scale all notes of the work done in the field as taken by the engineering parties. The cards upon which these notes are drawn are termed foreman's plats, and illustrate, exactly, the work as completed by the construction gangs. They show mains, valves, hydrants, all connections, the removal, lowering, or changing in any form, of mains or fittings, and the addition of special parts on old work, etc. The work upon the plats, when checked and approved, is finally recorded upon all maps in the department and the plats filed away for future reference.

Under the head, "Locations recorded, no plats necessary," is included all information concerning existing water mains brought in through any one of several different channels, such as the leak gangs, water registrar's office, pitometer division, etc. This information is made a matter of record, posted on the water-main maps and map tracings, and filed away for future reference with the other field notes and records.

All meter installations, and private service connections 3 inches or over in diameter, are plotted with pencil upon cards printed for that purpose and forwarded to the water registrar, immediately upon completion of the foreman's plat for that job, for his information and action in making proper meter accounts, charges, etc.

Each month, information concerning their organization has been obtained from the chiefs of the several divisions and subdivisions of both the distribution and revenue branches of the department, and from this the organization chart has been corrected, if necessary, and otherwise kept posted to date. New prints have then been made and distributed to various officials.

The six sections of the 300-foot scale wall maps of the District, completed in January, 1911, showing all water mains, valves, fire hydrants, and water-service areas, have been kept posted to date and the new subdivisions added as they have been made by the surveyor's office. On account of its large scale, its ready accessibility, and general convenience these maps have proved a valuable asset to the office. In the course of the year it was found necessary to make a few additions to the map case. To assist in the inspection, as well as in the posting of the maps, three 16-candlepower lamps were attached to the front of the case. Later a stool and an adjustible table were also added to facilitate the posting of the lower portions of the several maps. The original drawings of the map case and of its accessories have been changed and corrected to conform to the case as actually constructed.

Prior to March 1, 1912, water pressures were taken bimonthly on 100 fire hydrants, situated in various places over the entire District, by field parties assigned to that work. These pressures were recorded in books kept for the purpose, which, when brought into the office, were turned over to this division to record on special cards and in a special book, after which the hydraulic heads were computed and form parts of special maps drawn up at those times for the information and inspection of the superintendent. Besides these hydraulic heads this map shows the water-service areas and trunk mains. The department in this way has a very careful and accurate means by which to watch the pressure and supply in all parts of the District. Subsequent to March 1, 1912, the number of fire hydrants on which water pressures were taken was reduced from 100 to 45. This change was deemed advisable in order to save time and to eliminate the excessive travel found necessary, in view of the fact that the pressures taken previously had been so consistent and the results so uniform. This change necessitated the construction of new pressure maps, cards, and a book for recording pressures, which were provided by this division.

The work of constructing new 100-foot scale maps of the northwest, northeast, and southeast sections has been continued from time to time through the year. As the maps were completed two tracings were made, one being inserted in the sets of tracings in room No. 310, the other being bound with the tracings in the office of the water registrar. In addition to this work the 50 and 100 foot scale map tracings in our own office and in the water registrar's office have been kept posted to date, as have been the 300-foot scale wall maps and the 300-foot scale map tracings. These maps show all water mains, valves, hydrants, horse fountains, etc., laid by the water department. As new work or changes in old work is completed in the field the maps are posted immediately to correspond thereto.

The earlier method of constructing maps only for such portions of the District as contained water mains has caused many of the 100-foot scale county maps to overlap. The overlapping portions appeared sometimes on three different maps. This occasioned much unnecessary work and loss of time in posting the same information on two or more maps. Consequently all maps and map tracings were carefully checked, the overlapping portions marked "Void," and notes posted thereon referring the reader to the map on which locations appeared in their correct and complete form. Further, to insure the completeness of the 50 and 100 foot scale maps and map tracings, these were checked with the engineers' notes for the past four years. All mistakes and omissions were noted and the maps carefully posted and completely brought up to date.

Projects for the proposed extension of water mains are made from the records of the several departments and show adjacent property abutting the proposed mains, existing water mains, gas mains, sewers, electric conduits, curbs, pavements, etc. They are made for all water-main extensions applied for or recommended by such officials as the health officer, chief of the fire department, or the engineer of highways, and for all special extensions deemed advisable by this department and tending toward the betterment of the service.

All projects are made by this division. The work on these is practically continuous. The largest project made during the year was that for Massachusetts Avenue Heights, for 24,250 feet of 8-inch water main and 5,125 feet of 12-inch water main.

A plan showing the layout of water mains in and around Potomac Park and the Monument Grounds was made for the proposed metering of these reservations, as part of the general plan to ascertain the amount of water used by the Federal Government.

In accordance with the commissioners' order of March 8, 1908, cards were sent to the assessor showing the location and giving a brief description of all work of laying water mains in the District ordered by the commissioners. A copy of the morning report made out daily by the foreman of the department is furnished this division and from this new jobs are noted, cards constructed, and sent immediately to the assessor.

Under the head of "Communications written" are placed, among other things, reports on projects and files passing through this office pertaining to water-main extensions, availability, etc. With these are reports upon applications for estimates for the installation of special private-service connections, changes in the existing mains, and other work of a similar nature; the writing of weekly reports and post-card followers for all information concerning the locations of water mains and fire-hydrant pressures given out over the telephone.

At the urgent suggestion of the Master Plumbers' Association a schedule was compiled by this division showing the cost of installing 3, 4, and 6 inch private service pipes. This schedule was so arranged as to enable anyone to estimtae the cost of the connection to be made and to forward the necessary sum to the department with the request that the connection be made. This considerably lessened the clerical work of the division. The consideration of special estimates for each connection was discontinued at the end of the fiscal year and was replaced by a flat-rate schedule, likewise compiled by the division of miscellaneous drafting.

The log begun April, 1908, and designed to illustrate graphically through its several elements, the results attained at the district pumping station, has been kept posted by daily entries. Daily averages for each month have been calculated and posted, after which daily averages for the year have been computed and posted. By including the averages of previous years, comparisons can be made and differences readily discerned.

This division has ascertained the subdivision of all parcel property of the District on the 6th day of every month. This is done that no land which can be assessed for water mains existing before subdivision occurs may be allowed to escape taxation.

Throughout the year the work of checking leak-gang reports with water-main map tracings has been continued. As a result of this work many water mains have been definitely located whose locations the department had hitherto been uncertain or totally ignorant of. This work has gradually tended toward the perfection of our water-main map records.

Of a like character is the work of posting new water-main taps. These records are obtained from cards turned in at the water registrar's office by the tapper after he has tapped a main for a new house connection or service, and show the size and location of the tap with other information, much of which is as valuable as that derived from the daily leak-gang reports.

The work of copying upon permanent cloth records the old paper maps, drawn some 16 years ago, was nearly completed during the past year. This work was carried on when the rush of other work would permit, and at present all of the miscellaneous maps are in good substantial, legible form. The maps, when copied in this manner, were checked and rechecked to make certain that no information contained on the old maps had been overlooked or left off the copy before the old map was destroyed.

To do away with unnecessary cutting of newly made sidewalks or pavements by the subsurface work, the surface department send schedules of their proposed work, locating and briefly describing each job to be undertaken. It is the work of this division to look up each job and notify the surface department of any work in the same location to be done by this department. Upon completion of said work, releases are sent to the surface department and their work proceeds, at least as far as this department is concerned.

The position of official photographer, abolished in August, 1910, was reestablished in August, 1911, and the work of posting the photograph album in the office of the superintendent was again taken up by this division. All photographs sent in have been posted.

One of the chief duties of part of this division is to furnish all officials or private individuals, requesting the same in person, with information upon various phases of the work of the department, such as water-main locations, water pressures, and many

other matters which frequently require lengthy research among old records, and cover many details of the work, both past and present, in and out of the office. This work consumes much time, as requests for information are numerous, and consequently interfere with the performance of other duties.

The work of posting, daily, the work-in-progress maps has been continued throughout the past fiscal year. These maps show, by means of pins with colored heads and small squares of white cardboard, the location of a job and the foreman in charge, and illustrate in a similar manner work ordered and work merely applied for. The information for these maps is obtained from the morning report of the department foreman and from card records kept by the miscellaneous clerical division, In the course of the year these maps have been checked three times so as to insure the absolute correctness of the information contained thereon.

The system of keeping the time consumed on all jobs by members of this division, instituted April, 1911, was continued throughout the year. The system consists of daily time sheets made out by each individual which show the exact time spent on all jobs, and of a weekly time sheet upon which is recorded information contained on the daily time sheets. From this weekly time sheet the cost of the drafting upon any job can be readily computed. By the use of these cards and sheets, the time upon all plats, projects, maps, and map tracings has been obtained. The following shows, exactly, the average cost of the drafting upon the work specified:

No.	Work.	Average cost each.
62	Plats for job No. 2556 (drains to hydrants)	$0.55
76	Plats for job No. 2197 (valves in place of old)	.85
110	Plats for job No. 2195 (fire hydrants in place of old)	.97
396	Plats of miscellaneous work (assessment, deposit jobs, etc.)	1.30
644	General average for all plats	.91
9	Maps made from engineer notes (large water-main extensions)	8.01
201	Projects	.89
10	100-foot scale water-main maps	8.01
20	100-foot scale water-main map tracings	1.07

Because of the innumerable requests for information concerning the distribution and revenue branches of the water department, water mains, source of supply and method of delivery of the water to and in the District, and questions involving even a larger scope, it was considered desirable to compile as much of this information as possible and publish it in pamphlet form, the thought being that much time and inconvenience would be saved by simply mailing or presenting the inquirer with a copy of this pamphlet in answer to his query. With this in view, this division searched through all available records to ascertain facts concerning the history of the water department, and the source, intake, storage and filtration of the water used by the District. Many other matters were also investigated and all of the information obtained will be compiled and published in this pamphlet.

In preparation for the future extension of the distribution system, a map showing, in the colors, the existing trunk water mains assigned to the several water-service areas, and one showing in like manner the proposed trunk water-main extensions, were made, framed, and hung on the walls of room No. 310 for ready reference. These were made from information obtained from old maps and detailed records, showing locations, approximate length, and estimated cost of all existing and proposed trunk water mains.

There were 37 sets of 300-foot scale blue prints made at the pumping station and distributed by this division in the course of the past fiscal year. These sets were given to the foremen, leak gangs, and other parties in the department needing them in their work. They have proved invaluable to those possessing them in affecting cut-offs, and in segregating the distribution system with little or no difficulty, waste of time or energy.

There is a great deal of work done by the division of a more general character which should be mentioned here. This included miscellaneous lettering, indexing records and maps, changing and correcting drawings and blue prints, indexing and correcting mechanical drawings, figurin g and checking the weight of wrought and cast iron pipe and fittings, keeping posted to date the indices of wells, horse fountains, public hydrants, etc.

Brief descriptions of some of the new work accomplished by this division follows:

With the intention of purchasing two machines for use in the work, tests for determining the relative efficiency of several makes of autotrucks were conducted by the department early in the fiscal year. This division participated in the tests, but as a special report was made covering the work on the tests, no detailed report is given here.

For the high-pressure fire-service system, study maps were prepared, the length of necessary pipes computed, and the cost of the installation of pipe and hydrants was estimated. This was also prepared by this division and has been covered by a special report.

Twice a month statements are received by the department from the filtration plant showing in detail the number and character of microscopic organisms found in the Reno and Brightwood Reservoirs. These statements are posted by this division on sheets designed for the purpose, for the inspection of the superintendent.

Plats showing the location and describing very briefly the land purchased by the water department were constructed by this division. The ground area and available floor space of all buildings owned by the department was computed and recorded. This was done for the inventory ordered by the Commissioners of the District of Columbia, the plats forming part of the record now in the office of the auditor of the District of Columbia.

In order to have a complete index to all the fire hydrants in the District, a fire-hydrant index book was started and worked on, when other more important duties would permit, during the past fiscal year. The book contains the locations, elevations, dates of setting, and make of all fire hydrants in the District, all carefully indexed by the vowel system in the front of the book.

When listing and checking the bill of material listed on all jobs for which foreman's plats were required, it frequently happened that the same length for a fitting was not taken in both computations. In order to have some definite standard to refer to, an index illustrating and giving the dimensions of all standard water-main fittings was started. On account of the changes made in the manner of making records, it was thought unnecessary to complete the index, which was in consequence discontinued.

In many cases when a water main is being extended by laying a comparatively few feet over the amount necessary to serve the applicant's property, one or more dead ends may be eliminated, thus giving better circulation in the mains, and generally increasing the efficiency of the service. With this in view, a map showing all dead ends and blow-offs in the District was made for ready reference by the division in constructing projects for proposed water main extensions. This map is kept posted to date by division A5.

For the information and guidance of both this office and the office of the water registrar, a list was compiled of all trunk water mains over 12 inches in diameter which were available and could be tapped for the service of the abutting property, and those mains 12 inches and under which were not available for the service of the abutting property. The need for such a list has been made apparent through the frequent inquiries made to this office by the office of the water registrar as to the availability of a given main, and through the discovery that certain trunk mains were being tapped when service mains were available.

It sometimes happens that a report of a leaky or broken alley water main comes into the office with no other location that the name of the alley. Several names are often applied to the same alley, and in other cases the same name is given to several different alleys. To overcome this condition and to avoid unnecessary loss of time which this confusion occasions, a list of names of all alleys was begun by this division and will be completed in the present fiscal year. This work was done with the help of information derived from such sources as the health, electrical, and post-office departments, the water registrar's office, Boyd's City Directory, etc.

A means by which the efficiency of the division would be increased was considered in the latter part of the year. It was intended to include a card and bulletin-board system showing the work in progress and the future work planned, and the future work which had not been planned, etc. Other cards, under each draftsman's name, would show what particular job he was working on, date and time of starting, date and time of completion, total time on work, etc. It is thought by this means that more rapid and accurate work can be obtained from the draftsmen.

The force employed in this division at the present time consists of 3 draftsmen, 1 acting as chief draftsman, and 5 skilled laborers working as assistant draftsmen. The work of these men has been very satisfactory, and in a large part has made possible the efficiency of division A9.

SUBDIVISION A10.—*Telephone switchboard.*

A brief summary of the chief items of work done during the year follows: Recorded 3,370 leaks; 1,249 fire hydrants in service; 1,128 fire hydrants out of service; 3,307 hauling orders; 2,562 reservoir elevations; 715 fire alarms; 7,149 leakmen's reports; 5,300 cut-offs by the water registrar; 129 cut-offs by the pitometer division; 596 locations of new jobs; 29 water complaints; 1,316 weights and miles traveled by auto-trucks; 99,036 telephone connections. Two thousand four hundred and sixty work orders were issued for repairs to street hydrants, fountains, etc. The telephone

switchboard is connected by means of four trunk lines with the system of the Chesapeake & Potomac Telephone Co., by 2 lines with fire-alarm headquarters, 2 lines with police headquarters, and 30 lines with the various divisions and branches of the department, reservoirs, etc.

Mr. H. C. Fowler, chief operator, is in charge of the work.

DIVISION B.—*Stables and transportation.*

This division, under Mr. G. A. von Dachenhausen, is charged with the care and maintenance of the water-department stables and with all hauling and miscellaneous transportation, shoeing of horses, etc.

Following is a summary of the principal work accomplished:

Men employed daily in connection with the stable and transportation: Foreman, 1; blacksmith, 1; blacksmith's helper, 1; drivers, 31.

Maintenance of roads furnished 3 laborers and watering cart.

The following have been furnished with transportation: Four to eleven foremen with teams to haul material and move dirt; two 4-horse trucks and 2 to 8 hired teams to haul pipe and fittings; engineer division, 2 single teams; foreman, 1 single team; timekeeper, 1 single team; pitometer division, 5 single teams; water registrar, 1 single team; valve division, 3 single teams and 1 double team; fire-hydrant division, 2 single teams and 2 double teams; miscellaneous hauling, 2 single teams, and auto-truck 1½ months; paver, 1 cart.

In addition to routine work the following was hauled:

Cast-iron pipe:		
48-inch	tons	8
36-inch	do	6
30-inch	do	4
24-inch	do	4
20-inch	do	1,180
16-inch	do	1,404
12-inch	do	862
8-inch	do	2,710
6-inch	do	136
4-inch	do	64
3-inch	do	19
Steel pipe:		
16-inch	do	40
12-inch	do	16
Galvanized iron pipe:		
2½-inch	do	13
2-inch	do	5
1¼-inch	do	4
1-inch	do	6
Terra-cotta pipe:		
24-inch	lengths	68
Valves:		
20-inch	tons	4
12-inch	do	8
8-inch	do	23
6-inch	do	6
Fittings:		
48-inch	do	8
36-inch	do	3
30-inch	do	6
20-inch	do	25
Miscellaneous fittings	do	295
2-horse wagon loads of pipe and fittings	do	28
Pig lead	do	121
Fire hydrants	do	99
New brick		13,550
Granite blocks		6,600
Sand	cubic yards	270
Soil	do	180
Gravel	do	196
Cement	barrels	532½
Loads of freight:		
1-horse wagon		110
2-horse wagon		101
Shoes	sets	980½

DIVISION C.—*Inspection of machinery, pipe, specials, etc., at place of manufacture.*

During the year three inspectors were employed inspecting cast-iron pipe and special castings made for this department by the Lynchburg Foundry Co., United States Cast Iron Pipe & Foundry Co., Glamorgan Pipe & Foundry Co., and the Standard Cast Iron Pipe & Foundry Co.; 3,192 tons of pipe and 283 tons of special castings were inspected.

DIVISION D.—*Revenue and inspection.*

For a statement of the work of this division attention is invited to the report of the water registrar, Mr. G. W. Wallace, appended hereto.

DIVISION E.—*Miscellaneous clerical.*

This division is charged with all work relating to records of contract material delivered, preparation of vouchers for contract and open-market purchases, transfer vouchers for work done by the department on deposit of cost, or for other departments on account; with transmission of all papers to their proper destinations; with keeping of all accounts relating to the employment of labor, expenditure of material, job costs, etc., and with making of requisitions for material as called for by other divisions, and the handling of all miscellaneous correspondence.

During the year 3,078 vouchers and 2,154 "files" were received and forwarded; 1,283 requisitions for material made; 316 transfer vouchers prepared; 1,408 letters and 65 postal cards mailed; 954 card records made; 1,293 work orders transmitted; 837 official letters forwarded; miscellaneous papers handled, 45,917; letters received and filed, 519; 1,032 pay rolls prepared, and 23,133 material slips checked, entered, and filed.

The number of papers handled was greatly in excess of the total for the previous year, i. e., 1911, 57,256; 1912, 81,989, an increase of 24,723. Notwithstanding this large increase all papers were forwarded to their destination promptly.

An inventory of the unexpendable property of the water department, real and personal, was completed under date of June 30, 1911, the items being classified and priced. Two copies were made, one of which was forwarded to the auditor of the District of Columbia and the other filed in this office. Returns of property received and disposed of have been made and forwarded to the auditor each quarter during the year.

The purchasing officer has been notified monthly of the quantity of material delivered under contract. From this notice vouchers have been prepared by him for payment.

Transfer vouchers have been prepared and forwarded to the auditor for all work done during the year for other departments of the District, the United States, and on deposit of the estimated cost, and the amounts credited to their respective appropriations, except the following: Army War College, $253.84; Mr. Elliott Woods, superintendent, United State Capitol Building and Grounds, $87.12. These were reported back from the United States Treasury with the statement that the appropriation to which they were chargeable were exhausted. They are, however, included in the general deficiency bill. When this bill is passed the transfers will be made.

Repairs were made by the water department on service pipes that were found leaking to 17 premises at a total cost of $75.41. Eleven owners complied with the request of the department for reimbursement to the amount of $51.85. Six refused to reimburse the department.

The work of this division is up to date.

Mr. W. C. Small, clerk, has charge of this work.

DIVISION F.—*Pitometer surveys for the detection of waste.*

The work of this division is under the direction of Mr. Paul Lanham, from whose report the following was taken:

The routine pitometer surveys during the year just closed were conducted entirely within the gravity service with the exception of one pitometer district embracing the Capitol Hill section of the first high service. These two services always give profitable returns on the surveys and it has been found to be a good plan to examine one or the other of them each year. Special work, performed during the year, consisted of the determination of the mean and maximum rates of consumption in all Federal buildings for the information of the officials of the filtration plant, the measurement of the capacities of two hot-water pumps for the electrical engineer of the navy yard, and the experimental work with mechanical recorders. In addition to the above, a number of miscellaneous tests were made in the Reno service.

The results of the year's work were very gratifying, and although the quantity of underground leakage found was not as large as heretofore, it is felt that permanent inroads have been made into the water waste; indeed, the falling off in the quantity of leakage found on the resurveys indicates that this is the case.

Tests of important trunk mains were pushed forward as rapidly as possible by the assistant pitometer operator, more of this being done during the year than in all previous years since the inauguration of this work. Very satisfactory results were obtained, not only as to the number of mains tested, but in the tracing up and determination of the cause of all suspicious flows. An important factor in the success of this work was the very efficient assistance rendered by the valve division in shutting off the mains. In this connection, it should be noted that, for a pitometer test of a main, an almost perfect shut-off is necessary, the nature of the work preventing the use of blow-offs and fire hydrants as is done for construction purposes. A statement accompanies this report giving in detail the location, size, and condition of all trunk mains tested, and particular attention is invited to the fact that in not a single instance was a flow detected and its cause not determined.

The routine survey work was conducted along the same lines as in the past, the organization of the division remaining practically the same, except for the employment of six additional men, the intention being to create two extra field parties. They were placed in the old parties, however, to become familiar with their duties, and, in the capacity of inspectors, have contributed largely to the success of the year's work. The daily average force of this division during the year was 41 men including laborers and drivers.

In the gravity service, all of our permanent districts with the exception of district A, or the business section of the city, were measured and surveyed in detail. Measurement of the consumption in A was made, but the detailed survey was omitted because it could not be started at the proper season to complete the work before cold weather.

In district B, comprising 507.23 acres of gravity territory lying south of the Mall and west of Four-and-a-half Street SW., a pitometer measurement of the consumption for the seven days ending May 4, 1912, showed a mean daily rate of 3,826,800 gallons, with a minimum night rate of 2,900,600 gallons, or 76 per cent. This rate is 3 per cent higher than before the first survey of this district in August, 1909, and, as that survey resulted in a reduction of this percentage from 73 per cent to 69 per cent, a resurvey was considered important. The result of the resurvey was the detection of a total underground leakage of 184,450 gallons per day, 149,850 gallons of this being from service pipes and 34,500 gallons from joints on mains. These two items, representing the most important sources of underground waste, show a considerable reduction when compared to the corresponding figures of the first survey, and indicate that some headway has been made against the waste in this district. A total night flow at the rate of 1,817,300 gallons per day was traced to consumption and waste within the buildings, 558,500 gallons of this being due to leaking fixtures and waste within the dwellings, etc., and the balance to use within the Bureau of Engraving and Printing and other Federal buildings. With the exception of the Washingtom Market Storage Co., situated on Twelfth Street, between E and Water Streets, where a metered night flow at the rate of 245,000 gallons daily was found, not a single metered consumer was detected using water between midnight and dawn at the time of the tests. The consumption of water in the Federal buildings at night at the rate of 1,258,800 gallons daily, representing 78 per cent of their mean daily consumption, makes the condition of the district B appear unusually bad when judged by the per capita consumption of 289 gallons, or by the ratio of the night rate to the mean daily supply. If we eliminate this consumption from our figures, which is a fair procedure since we have no control over it, the per capita consumption of the district will be reduced from 289 to 160 gallons per day and the ratio of the minimum night rate to the mean daily supply from 76 to 74 per cent. With this correction, the condition of this district compares favorably with other residential unmetered districts of the city. Statement B, which accompanies this report, gives in detail the results of the surveys in this and all other districts examined.

In district C, which comprises 824.29 acres of gravity territory lying between Four-and-a-half street SW. and Fourth street SE., a pitometer measurement for the seven days between April 28 to May 4, 1912, showed a mean daily rate of consumption of 3,366,000 gallons, with a minimum night rate of 2,773,000 gallons, or 82 per cent. This district is of purely residential nature, having a population of 19,817, 28.9 per cent of which is metered. The per capita consumption at the beginning of the survey was 170 gallons, as compared to 167 gallons at the beginning of the first survey in 1910, an increase of 3 gallons. There has been a marked decrease in the mean daily rate of consumption, however, since our first survey, and the ratio of the minimum night rate to the mean daily rate has decreased from 85 per cent in 1910 to 82 per cent at the begin-

ning of the survey just made. As a total underground leakage of 86,300 gallons per day was eliminated by the survey, this ratio will undoubtedly show a reduction from this last figure on our next measurement. The total night flow detected by the subdivision tests amounted to 2,039,800 gallons per day. Of this amount, 867,300 gallons was accounted for by underground leaks on service pipes, mains, etc., as stated above; 5,300 gallons by use for sewer flush basins, 30,200 gallons by horse fountains, 63,200 gallons by use within municipal buildings, 156,000 gallons, by flow within metered dwellings, 563,300 gallons, by flow in unmetered dwellings, and 210,700 gallons by use within Federal buildings.

In district D, embracing all of the southeast gravity territory lying east of Fourth Street SE., having an area of 464.43 acres, the mean daily consumption from December 16 to 22, 1911, was 3,168,000 gallons, with a minimum night rate of 2,700,000 gallons, or 85 per cent. The per capita consumption, based on a resident population of 11,815, 3.4 per cent metered, was 268 gallons. The high per capita consumption and percentage of night rate in this district is due largely to the heavy use of water in the Washington Navy Yard. Eliminating this consumption, 1,790,000 gallons per day, the ratio of the night rate to the mean daily supply would be much lower and the per capita consumption 117 instead of 268 gallons. A total underground leakage of 554,500 gallons was detected and prevented. This was the first survey of this district to be made since the present system of records has been in operation and no comparison can yet be made of the conditions.

The second survey of district E, which includes all of the gravity territory lying west of Fourteenth Street NW., shows a marked improvement in the condition found on the first survey, made in 1909–10, the night rate being 68 per cent of the mean daily rate, instead of 79 per cent as at that time. This district is one of the largest of our permanent subdivisions and includes a number of large Federal buildings which are heavy water consumers. The per capita consumption in 1909 was 351 gallons daily and 282 gallons at the beginning of the last survey. If we eliminated the Federal consumers in our comp tations, both the ratio of the night rate to the daily supply and the per capita consumption will be much lower.

In district F, which comprises 1,435.86 acres of gravity territory lying east of New Jersey Avenue and north of East Capitol Street, a pitometer measurement for the seven days ending December 22, 1911, showed a mean daily consumption of 6,860,000 gallons, with a night rate of 4,428,000 gallons, or 65 per cent. The per capita consumption, based on a resident population of 35,915, (11.8 per cent metered), was 191 gallons at the beginning of the survey. No previous survey has been made of this district; therefore no figures are available for comparison. The heavy use of water at the Government Printing Office influences the per capita consumption and night rate of this district to a large extent. If this is eliminated from our computations, a much more favorable showing could be made.

In district G, which comprises 773.5 acres of first high territory on Capitol Hill, a measurement of the seven days ending March 2, 1912, showed a mean daily consumption of 5,472,000 gallons, with a night rate of 4,560,000 gallons, or 83 per cent. This ratio is 8 per cent higher than that found on our first survey of this district and is probably due to the fact that the last measurement was made in January during the abnormally cold weather then prevailing. The per capita consumption was 178 gallons daily as compared to 143 gallons on the first survey. This also is partially, if not wholly, attributable to the abnormal weather conditions. A total of 738,350 gallons daily underground leakage was found and stopped by the second survey of this district. This was the only portion of the first service to be surveyed during the year.

Summarizing the results of the surveys in the various districts gives a total of 5,115,320 gallons daily underground leakage found and prevented, including the results of the miscellaneous trunk and service main tests and inspections. This item is not as large as heretofore, due to the fact that all of the territory covered has been worked several times previously. The leakage was found to be distributed among the various causes approximately the same as on previous surveys; service pipes and joints on mains being the principal sources. (See statement C.) A total of 39,177 service pipes and 31,289 houses were inspected, this difference being due to the fact that no inspection was made of 7,888 metered houses. Of the houses inspected, 4,943, or 15.8 per cent were found with defective fixtures. These were referred to the water registrar's office, and, while no record was kept of the quantity of waste from this source, it was undoubtedly large. In the course of the service-pipe work, it was necessary to clean approximately 30,000 curb stop-cock boxes, a great number of these being stopped so completely by débris that an excavation was necessary. This work is not only expensive, but the inconvenience and delay occasioned result in erroneous figures, and frequently cause the repetition of tests after the boxes are cleaned. A number of laborers are kept constantly at work cleaning these boxes in advance of the inspectors

but they are often found again obstructed within 24 hours. This trouble and expense could be entirely eliminated by the installation of stopclocks of the proper pattern in the meter boxes, and I strongly recommend that this be done.

Throughout the year the recording pitometers were shifted from place to place and measurements obtained of the water consumption in the permanent districts. The data thus obtained will be of the greatest value in future surveys by making it possible to know what conditions are to be expected in any portion of the city. While engaged in this work in the first high service during the past year, a discrepancy of 17 per cent was detected between the total flow indicated by our pitometers and the station pump displacement. This was traced to pump slippage.

Before closing this report I desire to give the following figures taken from the station log. I believe they prove the efficacy of the water surveys beyond question. The mean daily gravity service consumption in the fiscal year 1907–8 was 42,165,300 gallons. This service was worked almost exclusively by the pitometer field parties for the two years following, the consumption falling off to 38,372,100 gallons daily in 1908–9, and to 35,362,100 gallons in 1909–10. During the period covered by this work, the first high service consumption was steadily increasing, being 18,633,100 gallons in 1909–10, against 18,073,700 gallons in 1908–9 and 17,519,600 gallons in 1907–8. The water consumption in these two services should rise and fall together as the consumers in them are of the same classes. The heavy decrease in the gravity service can therefore be attributed entirely to the work of the pitometer parties. The significant point, however, is, that when the operators were shifted in 1910–11 from the gravity to the first high service, this latter service consumption dropped from 18,633,100 gallons to 17,893,300 gallons daily, and the gravity service consumption, which had been decreasing previously, immediately increased from 35,362,100 to 36,436,500 gallons daily. Furthermore, when in 1911–12 our parties were again placed in the gravity service, the consumption therein dropped from 36,463,500 to 35,844,100 gallons daily, and the consumption in the first high service increased from 17,893,300 to 19,546,100 gallons daily. The conclusion to be drawn from these figures is obvious and indisputable.

A noticeable feature of the year's work was the great increase in the number of leaks found and the decrease in the quantities of leakage chargeable to the individual cases. This latter feature was expected, and indicates that leaks are now being detected which have previously been overlooked. As small leaks are the more difficult to locate, these conditions are evidence of the increasing efficiency of the employees of this division.

SUPPLEMENTS.

A, statement of trunk main tests.
B, statement of district surveys.
C, statement of year's results.
D, statement of miscellaneous night tests.
E, statement of district measurements.
F, chart; effect of pitometer surveys on water consumption.

A.—*Trunk main tests, 1911-12.*

Location.	Size.	Service.	Pitometer distance.	Date.	Shut-off.	Rate (gals. per day).	Flow due to.
	Ins.						
1. B Street, between Delaware Avenue and Fourth Street NE.	20	First high	G	Aug. 13, 1911	O. K.	84,500	U. S. Capitol, 82,386 gallons; flush basins, 2,143 gallons.
2 Connecticut Avenue, between Calvert Street and Cathedral Avenue NW.	12	Third high	Miscellaneous	Sept. 17, 1911	do	28,400	2307 Calvert Street, 2625 Connecticut Avenue (inside waste, 1,710 gallons; defective 6-inch sleeve, 26,725 gallons).
3. Florida Avenue, between Georgia Avenue and Fifteenth Street NW.	12	do	do	Nov. 19, 1911	do		
4. Woodley Road, between Connecticut and Wisconsin Avenues NW.	12	do	do	Nov. 26, 1911	do		
5. Sixth Street, between Trumbull Street and Grant Circle, and New Hampshire Avenue, between Trumbull Street and Grant Circle.	20	do	do	Jan. 21, 1912	do		
6. Illinois Avenue, between Upshur Street and Georgia Avenue NW.	12	do	do	Feb. 4, 1912	do	6,300	2 inside metered flows and defective valves, 6,300 gallons.
7. K Street, between New Jersey Avenue NW. and First Street NE., and New Jersey Avenue, between K and L Streets NW.	24	Gravity	F	Feb. 11, 1912	do		
8. K Street, between First and Eleventh Streets NE.	24	do	F	Feb. 25, 1912	do		
9. New Jersey Avenue, between B and L Streets NW.	30	do	F	Mar. 10, 1912	Not tight		
10. New Jersey Avenue, between B and L Streets NW.	30	do	F	Mar. 17, 1912	O. K.		
11. L Street, between Eighteenth and Twenty-eighth Streets NW.	36	do	E	Mar. 31, 1912	Not tight		
12. M Street, between Twenty-eighth Street and capped end.	36	do	E	Apr. 7, 1912	O. K.		
13. K Street, between Thirteenth and Eighteenth Streets NW.	30	do	E	Apr. 14, 1912	Not tight		
14. K Street, between Eighteenth and Twenty-ninth Streets NW.	30	do	E	Apr. 21, 1912	O. K.		
15. L Street, between New Jersey Avenue and Eleventh Street NW.	36	do	A	Apr. 22, 1912	Not tight		
16. Fourteenth Street, between B Street and Pennsylvania Avenue NW.	20	do	E	Apr. 28, 1912	O. K.	1,600	Inside flow in the Agricultural Grounds, 1,600 gallons.
17. K Street, between Ninth and Thirteenth, and Eleventh Street, between K Street and Massachusetts Avenue NW.	30 24	do	A	May 5, 1912	do	19,300	935 K Street NW., defective service and defective valve, Twelfth and K Streets, 19,300 gallons.
18. Massachusetts Avenue, between New Jersey Avenue and Ninth Street NW.	30	do	A	May 12, 1912	Not tight		
19. East Capitol Street, between Second and Eleventh Streets.	30	First high	G	May 19, 1912	O. K.		
20. Tenth Street, between B Street NE. and G Street SE.	12	do	G	May 30, 1912	do		
21. Sixth Street, between B Street NE. and South Carolina Avenue SE.	12	do	G	June 2, 1912	do		

22. East Capitol Street, between Eleventh Street and Kentucky Avenue, and Kentucky Avenue, between East Capitol and D Streets SE.	20	.....do.....	G.....	June 24, 1912	.....do.....	12,000	Defective 20-inch joint on Kentucky Avenue, between B Street and South Carolina Avenue SE., 12,000 gallons.
23. B Street, between Fourth and Eleventh Streets NE.....	20	.....do.....	G.....	June 30, 1912	.....do.....	36,900	635 Massachusetts Avenue NE. and 635 B Street NE., inside flows, 9,200 gallons; 516 B Street NE. and 604 B Street NE., defective services, 27,700 gallons.

B.—*Routine surveys of permanent pitometer districts, fiscal year 1911–12.*

	Districts.				Districts.				Districts.	
	B		C		E		G		D	F
	1	2	1	2	1	2	1	2		
Mean daily supply.....gallons..	3,372,800	3,826,800	3,637,800	3,366,000	7,638,000	6,148,800	4,272,000	5,472,000	3,168,000	6,860,000
Minimum night rate.....gallons..	2,458,800	2,900,600	3,097,800	2,773,000	6,062,400	4,156,800	3,216,000	4,560,000	2,700,000	4,428,000
Ratio of minimum night rate to mean daily supply, per cent.....	73	76	85	82	79	68	75	83	85	65
Subdivision survey, cost.....	.....	$2,147.71	.....	$2,128.37	.....	$3,213.26	.....	$3,280.74	$1,757.20	$5,941.45
Population:										
Resident—										
Metered.....	398	853	547	5,728	4,281	4,733	2,339	2,535	405	4,267
Unmetered.....	12,670	12,366	21,293	14,089	17,460	17,079	27,511	28,255	11,410	31,648
Total.....	13,068	13,219	21,840	19,817	21,741	21,813	29,850	30,790	11,815	35,915
Floating—										
Metered.....	1,217	1,268	3,044	3,070	4,069	7,698	2,243	7,978	2,690	12,477
Unmetered.....	7,336	8,292	1,534	895	9,575	7,625	1,238	3,024	1,001	1,401
Total.....	8,553	9,560	4,578	3,965	13,644	15,323	3,481	11,002	3,691	13,878
Per capita consumption (computed from resident population).....	258	289	167	170	351	282	143	178	268	191
Buildings:										
Dwellings—										
Metered.....	4	32	9	1,033	427	361	111	78	11	641
Unmetered.....	2,546	2,473	4,211	3,415	3,826	3,659	6,272	6,726	2,672	6,460
Hotels and apartments—										
Metered.....	5	14	10	6	51	50	36	46	3	15
Unmetered.....	23	2	153	.....	43	17	15	13	.....	17
Restaurants—										
Metered.....	21	19	33	34	36	40	15	20	23	42
Unmetered.....	3	2	13	2	11	6	2	1	1	11
Factories—										
Metered.....	11	9	14	17	21	14	6	2	.....	14
Unmetered.....	5	11	9	4	12	18	1	1	.....	9
Federal buildings—										
Metered.....	.....	.....	.....	.....	.....	4	6	.....	1	2
Unmetered.....	9	9	4	4	6	10	3	9	4	1

Municipal buildings—										
Metered	5	9	9	9	7	9	13	18	11	23
Unmetered	3	4	4	6	1	8	2	1	3	3
Miscellaneous—										
Metered	21	41	16	244	90	196	44	59	31	95
Unmetered	163	287	389	136	422	558	330	377	246	542
Total—										
Metered	67	105	91	1,343	632	673	231	223	80	832
Unmetered	2,752	2,711	4,783	3,567	4,321	4,272	6,625	7,128	2,926	7,043
Night flow detected by subdivision, gallons per day	2,183,000	2,315,700	2,571,500	2,039,800	3,578,800	2,072,700	2,850,500	2,713,000	2,507,200	4,510,000
Due to inside fixtures—										
Metered	28,300	245,000	195,300	156,000	300,300	388,700	332,700	168,350	83,256	646,500
Unmetered	474,700	313,500	956,200	563,300	1,282,000	564,592	617,300	1,028,100	631,200	1,485,600
Due to underground leakage—										
Services and abandoned taps	204,300	149,850	865,500	710,000	1,070,200	397,465	1,089,600	589,900	533,500	796,700
Joints on mains	81,000	34,500	90,100	133,500	173,200	59,600	269,300	143,450	18,000	37,400
Fire hydrants	500	.....	4,100	.....	300	.....	20,300	.....	.....	3,000
Public hydrants	.....	.....	8,000	20,000	.....	.....	2,000	.....	3,000	3,500
Valves and open blow-offs	.....	100	35,000	3,800	.....	800	120,600	5,000	.....	.....
Due to Federal buildings and fountains	1,357,500	1,258,800	283,000	210,800	411,400	490,500	310,100	633,600	1,178,200	1,256,800
Due to municipal buildings, flush basins, and horse fountains	24,300	44,530	141,500	98,700	59,200	52,000	34,300	34,600	19,790	32,600

NOTES TO TABLE.

District B 1: Measured, Aug. 20 to 26, 1909. Subdivision survey started Sept. 2, 1909; finished Apr. 14, 1910.
District B 2: Measured, Apr. 28 to May 4, 1912. Subdivision survey started July 29, 1911; finished Nov. 26, 1911
District C 1: Measured, May 18 to 24, 1910. Subdivision survey started Jan. 3, 1910; finished June 3, 1910.
District C 2: Measured, Apr. 28 to May 4, 1912. Subdivision survey started Aug. 26, 1911; finished Nov. 7, 1911.
District E 1: Measured, Sept. 13 to 19, 1909. Subdivision survey started Sept. 18, 1909; finished July 31, 1910.
District E 2: Measured Apr. 19 to 25, 1912. Subdivision survey started Aug. 17, 1911; finished Apr. 28, 1912.
District G 1: Measured, Aug. 6 to 12, 1910. Subdivision survey started July 11, 1910; finished Oct. 20, 1910.
District G 2: Measured, Feb. 26 to Mar. 2, 1912. Subdivision survey started Mar. 25, 1912; finished June 23, 1912.
District D: Measured, Dec. 16 to 22, 1911. Subdivision survey started Nov. 14, 1911; finished Feb. 10, 1912.
District F: Measured, Dec. 16 to 22, 1911. Subdivision survey started Dec. 23, 1911; finished June 4, 1912.

C.—*Results of pitometer surveys, fiscal year 1911–12.*

	Number.	Waste per day.
		Gallons.
Service pipes inspected (metered 7,888)	39,177	.....
Houses inspected	31,289	.....
Houses with defective fixtures	4,943	.....
Abandoned services and taps	12	174,184
Iron services broken	325	2,329,751
Lead services broken	134	976,720
Wiped joints broken	109	438,055
Couplings leaking	51	123,665
Curb stopcocks leaking	56	53,450
Joints on mains leaking	75	746,305
Mains broken	1	7,000
Valves leaking	15	27,050
Public hydrants leaking	10	50,200
Fire hydrants leaking	5	3,490
Blow-offs partly open	4	71,300
Street washers leaking	7	10,350
Defective goosenecks, wooden plugs, meter valves, and drains on services	9	103,800
Waste found and prevented	.....	5,115,320
Notices served	605	.....
Houses cut off	113	.....

Expenses, pitometer division.

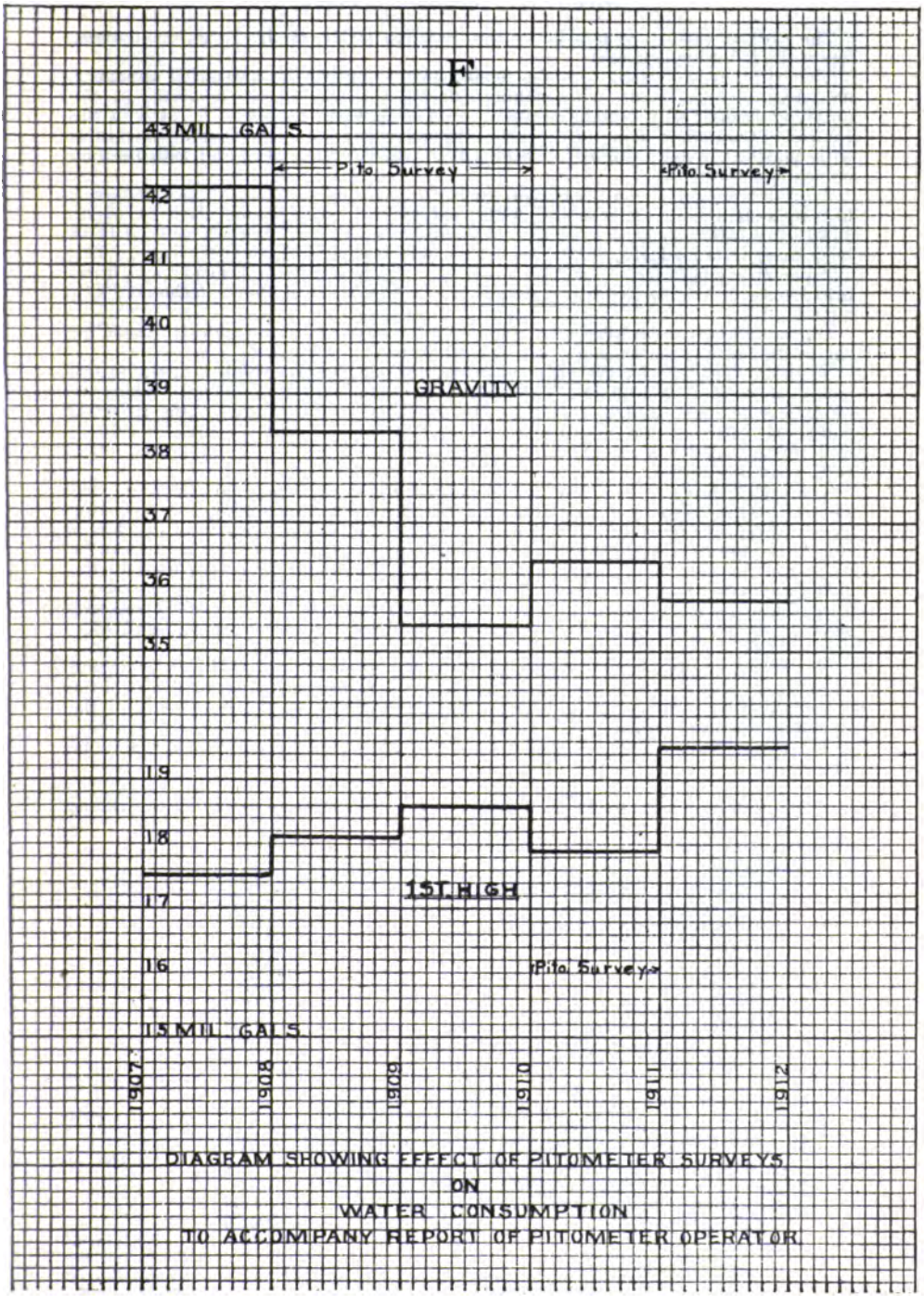
Operating expenses:		
Per diem labor	$25,531.85	
Material expended, cuts, wagons, etc	7,190.90	
		32,722.75
New work:		
Per diem labor	1,450.65	
Material expended, cuts, wagons, etc	521.95	
		1,972.60
Total expenditures		34,695.35

D.—*Miscellaneous night tests, fiscal year 1911–12.*

Tests.	Flow detected (gallons per day).	Flow due to—	Gallons per day.
51	123,745	Inside fixtures, metered	17,593
		Inside fixtures, unmetered	1,710
		Joints on mains	26,725
		Horse fountains	3,840
		Defective valves	14,988
		Federal buildings	30,692
		Total	95,548
		Unaccounted for	28,197

E.—*Measurement of permanent districts, fiscal year 1911–12.*

District.	Date.	Mean daily supply (gallons per day).	Night rate (gallons per day).	Ratio.
				Per cent.
A	May 29–June 4, 1912	8,458,000	5,904,000	70
B	Apr. 28–May 4, 1912	3,826,800	2,900,600	76
C	do	3,366,000	2,773,000	82
D	Dec. 16–22, 1911	3,168,000	2,700,000	85
E	Apr. 19–25, 1912	6,148,000	4,156,800	68
F	Dec. 16–22, 1911	6,860,000	4,428,000	65
G	Feb. 26–Mar. 2, 1912	5,472,000	4,560,000	83
G	July 8–15, 1912	5,256,000	3,696,000	70


F
43 MIL. GALS.
Pito. Survey
Pito. Survey
42
41
40
39
GRAVITY
38
37
36
35
19
18
17
15T. HIGH
16
Pito. Survey
15 MIL. GALS.
1907
1908
1909
1910
1911
1912
DIAGRAM SHOWING EFFECT OF PITOMETER SURVEYS
ON
WATER CONSUMPTION
TO ACCOMPANY REPORT OF PITOMETER OPERATOR

DIVISION G.—*Tests and experiments.*

The work of this division is under the direction of Mr. H. D. Yates, from whose report the following is taken:

This division is charged with the testing and correcting the measuring apparatus used by the department; with making calorimetric tests of coal delivered at the pumping station; with making accuracy tests of all water meters to be used in the District of Columbia; with purifying the oil removed by the waste cleaning machines; with figuring the daily pumpage, consumption, station duty, etc.; and with keeping necessary records.

A brief summary of the tests made during the year is as follows: Water meters, ⅝ to 8 inch sizes, tests for accuracy, 9,711; valves, ¾ to 20 inch sizes, tests for leaks, 1,599; corporation cocks, ¾ to 1½ inch sizes, tests for leaks, 3,996; curb cocks, ¾ to 1¼ inch sizes, tests for leaks, 3,253; stop cocks, ½ to 1 inch sizes, tests for leaks, 1,132; and pressure gauges tested and corrected, 52. Also made "loss of head" and durability tests of small-sized water meters and calibrations of fuel calorimeter, CO_2 recorder, etc.

During the year there were 393½ gallons of oil removed from the material passed by the waste-cleaning machine and rendered fit for use in oil cups.

The total pumpage for the year was 10,107,787,000 gallons, which is 1,007,193,000 gallons more than in 1910–11. The cost of operation, supplies, and net repairs, including grates, was $39,126.58, making the total operative cost of pumping 1,000,000 gallons of water into the mains $3.58. This cost is 3 per cent less than in 1910–11 and is due to the lower cost of coal, which was 26 cents less per ton, and to a reduction in the cost of supplies.

The station duty for the year was 83,584,010 foot-pounds per 100 pounds of coal burned. This is 8.72 per cent less than the duty obtained during the preceding year and represents an annual loss of 424.6 gross tons of coal. A part of this loss is due to the use of steam jets for the purpose of smoke prevention, and a part can be attributed to the management of the furnaces. The steam jets were used in the boiler furnaces throughout the year, while they were only employed during the second half of the preceding year. The station duty for the first half of 1910–11 was 94.9 millions of foot-pounds, for the second 88.3, and for the past year 86.0 and 81.4, respectively.

The accompanying tabular statements show the sizes and makes of all private and municipal water meters tested during the year, the results of calorimetric tests of the coal delivered at the pumping station, the pumping record for the year, and the operative cost of pumping.

The normal force employed consisted of two skilled laborers, one plumber, and one laborer.

Cost of operating pumping engines at the District pumping station during the year ending June 30, 1912.

Operating expenses:		
Salaries—		
1 chief steam engineer, one-half annual salary	$875.00	
3 steam engineers	3,300.00	
3 assistant steam engineers	2,625.00	
3 firemen	2,625.00	
4 oilers	2,440.00	
3 cleaners	1,916.25	
1 substitute fireman	360.00	
2 boiler cleaners	989.50	
1 electrician and helper, part of salary	978.12	
5 laborers[1]	2,667.50	
		$18,786.37
Coal: 10,911,540 pounds bituminous coal, at $3.17 per ton, in bins		15,441.78
Supplies: Cylinder oil, engine oil, crank-case oil, grease, waste, packing, washers, lard oil, and graphite		2,082.01
Repairs to pumps, engines, boilers, including grates—		
Per diem labor	$1,599.66	
Material expended	1,216.76	
		2,816.42
Total cost of operation		39,126.58

[1] The 5 laborers are employed as follows: 2 cleaning engine-room floor, 2 cleaning windows, galleries, etc., and 1 handling coal.

Total pumpage for the year, without allowance for slip	galls.	10,107,787,000
Greatest amount pumped in 1 day (Jan. 16)	do.	39,673,700
Least amount pumped in 1 day (Dec. 1)	do.	22,726,200
Average per day	do.	27,616,900
Average dynamic head against pumps, in feet		108.19
Duty $=\frac{\text{Gallons pumped}+8.34+100+\text{dynamic head}}{\text{Total fuel consumed.}}=$		83,584,010
Cost of fuel, pumping 1,000,000 gallons 1 foot high	cents.	1.41
Total operative cost of pumping 1,000,000 gallons 1 foot high	do.	3.58
Total operative cost per 1,000 gallons pumped	do.	0.387

NOTE.—The above items of supplies and repairs were furnished by the clerical division. The pumpage is figured from plunger displacement, without allowance for slip. The aggregate slip of all pumps during the year, based on pitometer determinations, is 3.91 per cent of the total displacement. The average dynamic head is figured from the total work done by pumping engines and generators. The fuel consumed is the total coal burned, excluding the heating system. The cost of heating—396,895 pounds of coal, at $3.17 per ton—was $561.67.

Analyses of "Jenner" bituminous coal delivered during the fiscal year ending June 30, 1912, at the District pumping station, Washington, D. C.

Months.	Dry coal.	
	British thermal units per pound.	Ash.
1911.		*Per cent.*
July	14,575	7.36
August	14,509	7.18
September	14,334	7.63
October	14,464	7.54
November	14,405	7.14
December	14,546	7.21
1912.		
January	14,627	6.95
February	14,476	7.16
March	14,261	7.96
April	14,392	7.86
May	14,453	7.31
June	14,363	7.37
Average	14,434	7.39

NOTE.—In selecting a sample for test a small quantity of the coal was taken from the front and rear ends of each wagon load as received. These were combined for monthly periods, and the required sample obtained by the process of quartering down. Tests were made with the Carpenter fuel calorimeter.

Tests of private and municipal water meters (excluding meters on endurance test) during the fiscal year ending June 30, 1912.

Meter.	Size.										Total.
	⅝ inch.	¾ inch.	1 inch.	1¼ inch.	1½ inch.	2 inch.	3 inch.	4 inch.	6 inch.	8 inch.	
American	14	1	11		8						34
Crown			9		18	10	4	1			42
Deacon								1			1
Davis disk		2									2
Empire	7	28	6		18	1	2	2			64
Enarc		5	6		5	3					19
Gamon	56										56
Gem						6	1				7
Hersey	4,555	96	21		28	4	2	5			4,711
Hersey detector	2							3	3	1	9
Keystone	2,715	27	7		10		5	2			2,766
King	22		6		13						41
Lambert	102	106	49		42	14	6	2			321
Nash	24	160	121		56	23	10	4			398
Niagara		22	23	3	9	6					63
Pittsburgh disk	18	10	12		6	1	2				49
Standard					3						3
Thomson		18	21		19	12	3				73
Trident	557	34	21		16	5	2	3			638
Union		5	17		2	3	1	1			29
Worthington	112	12	15		6	5	6	2			158
Total	8,184	536	345	3	259	83	44	26	3	1	9,484

DIVISION H.—*Pumping station and shops.*

This division has charge of all pumping incident to the operation of the distribution system, care of pumping stations and machinery, and all miscellaneous repair work needed in the department. It is under the direction of Mr. James T. Fink, chief steam engineer, from whose report the following is taken:

Water pumped, figured from plunger displacement:		
First high service	gallons	7,471,856,870
Second high service	do	2,015,162,470
Third high service	do	618,204,100
Total	do	10,105,223,440
Coal burned	tons	5,044.46
Cylinder oil used	gallons	452.25
Engine oil used	do	1,286.5625
Grease used	pounds	340.25
Waste used	do	897.00

The regular force employed for the operation of the pumping engines, boilers, and auxiliaries, cleaning of machinery, etc., is as follows:

Steam engineers	3
Assistant steam engineers	3
Firemen	3
Oilers	4
Cleaners	4
Laborers (not employed on Sunday)	5

For the fourth high service, the water is pumped from the Reno Reservoir (which is supplied by the third high service pumps) to an elevated tank by gasoline engines and triplex pumps. This machinery is operated daily by the watchman in charge of the reservoir, and one assistant on night duty. The water pumped for this service during the year=50,797,073 gallons.

Under the head of shop work are included the following divisions and the number of men ordinarily employed to carry on the work:

Machinists	8
Blacksmiths	2
Carpenters	5
Painters	3
Steam fitter	1
Brass molder	1
Laborers	10

NOTE.—None of the above employees work on Sunday.

The work accomplished during the year is as follows: All necessary repairs for the machinery at this station and the fourth high service station, automobile trucks, etc. Made practically all repair parts for fire plugs, valves, street hydrants, etc., including all tools used on the work of laying water mains, making connections to mains, etc., such as picks, chisels, breakers, caulking tools, yarning irons, valve keys, wrenches, pipe bends, eyebolts, arch irons, and miscellaneous tools and appliances as required for the various work; built derricks, fitted up meter batteries, made metal patterns and recording flow meter; replaced water mains on Klingle Ford and Calvert Street Bridges; set up emery grinder and forge in brass foundry and smith shop; made pipe jointers, pitometer orifices, stuffing boxes and other parts; erected channels on bridge for carrying water main on Minnesota Avenue; erected metal fence; made iron floor gratings and guards for Reno property yard and gate house; made steel ladders and platforms for gate houses at Brightwood Reservoir; made tools and fixtures for machining 8 and 6-inch valves; made border square. Built trucks for shop and diaphragm pumps, sectional valve keys; iron doors and frames for District Building; two portable drill presses for valve casings. Made 100 overflow pipes for fountains and 100 cement briquet molds, 2 gas heaters for valve work; erected gallery and rails for water softener; made experimental parts for water registrar's office; repaired drinking fountains; tar furnaces for the surface division; cut pipe and flanges and repaired parts of pumps, and stone crusher for Occoquan Workhouse; sharpened horse clippers, Smith cutters, paper cutter, knives; fitted up casings for fire plugs; built sixty-six 3-way, and seventy 4-way valves, 6 and 8-inch bells, fifty-five 8-inch and five 6-inch 2-way gate valves; bored out globe holders, made patterns, and drilled fire alarm and patrol boxes for electrical department; made 50 indicator posts; made 156 brass operating screws for valves of various sizes, waste valves, guides, crank shafts, side valves, springs, etc., for fire plugs; repaired 1,698 water meters of various sizes reversed bell on 62 fire plugs; renewed leather seats on 111 main valves for fire plugs; cut 4,000 pipe nipples from ¼ to 2 inches. Repaired valves as follows: Eleven 3-inch, fifty-three 4-inch, thirty-nine 6-inch, nine 8-inch, two 12-inch, seven 3-way and nine 4-way; total, 130 valves. During the year all composition metal castings for valve work, repair parts, etc., have been made in our own foundry, which has been operated without interruption, expediting the work in the machine shop, by having castings ready when needed and in such quantities as to be worked economically.

In the blacksmith shop the following work has been done: Made 643 chisels, 99 calking sets, 27 breakers, 46 stakes, 15 yarning irons, 21 casing hooks, 7 tunneling bars, 184 meter and curb box keys, 2 sectional keys, 13 square nut and 6 wheel keys, 26 curb stop key and 49 stone drills, sharpened 10,614 picks and 6,917 chisels, and welded 1,366 new ends on picks; made pipe bands and hangers, rod and plates for anchoring pipe; dressed stone drills, frost pins, fire and clinker tools; forged wrenches, swedging tools, bolts, etc.; made irons for tool wagons, pitometer boxes and trucks, ladders, hinges, latches, and miscellaneous forgings for machinists on new and repair work.

The carpenters have completed brass foundry; built addition to blacksmith shop; built skylight on auto repair shed; made flasks and boards for foundry; made patterns for valves, manhole and meter casings and covers; machine repair parts; built wagons, tool boxes, door and window screens, battery and instrument boxes, watchmen's recording gauge and pitometer boxes, forms for concrete work, ladders, map frames, card trays, storage cases, shelving, doors, sash, blinds, signboards and gauge boards; built inclosure for stairway in District Building; boxed and crated patterns, meter, and other parts for shipment; made miscellaneous repairs to buildings, wagons, pitometer, tool, and watchmen's boxes; boats for reservoir; automobile repairs; wheels and bodies; repairs on wheelbarrows; sharpening of saws and other tools for ditch work.

The painters have painted woodwork of pumping station, brass foundry, blacksmith shop, gate houses, automobiles, buggies, wagons, tool wagons and boxes, garage, iron fence, gate houses and tool houses at Reno Reservoir; finished inclosure for stair

at District Building; card cases, instrument boxes, map frames, stools, tables, card trays, glazed sash; painted ladders and platform and boats at Brightwood Reservoir; painted derricks, pipe, indicator posts, fountains, shelving, lockers, pitometer boxes, iron gratings, transit rods, sign boards, gauge boards, water barrels; stenciled oil cans, buckets, etc.; trimmed and upholstered wagons and buggies, made storm covers and miscellaneous work as required.

The electrician has taken care of generators, switchboards, motors, lights, etc.; operated crane, conveyor and economizer scrapers; run conduit and cable to brass foundry; connected motors for grinders in brass foundry and blacksmith shop, motors for blast fan, power hammer, centering machine, stokers, automatic scale, magnetic separator; water softener and three ventilating fans in stable; altered fixtures in Reno garage, and erected gasoline storage outfit at Reno; put up conduit and lights in gatehouse; erected charging panel for storage batteries; repaired fans; tested and recharged storage batteries; changed batteries and rewired automobiles; repaired telephones, circuit breakers, and switches; changed wiring on map case; connected electric heater; put up arc lamp in auto repair shed; changed motor and starting panel in carpenter shop and telephone and lights in library; repaired electric hoist; soldered oil cans; eave troughs and down spouts in buildings; charged batteries for bells, engine stops, gasoline engines, etc.

The janitor and his force have taken care of all the cleaning throughout the building, removing shavings from the wood working shop, turnings, scraps and other débris from the machine shop, attended to the window cleaning, water coolers, messenger service to the office, etc.

* * * * * * *

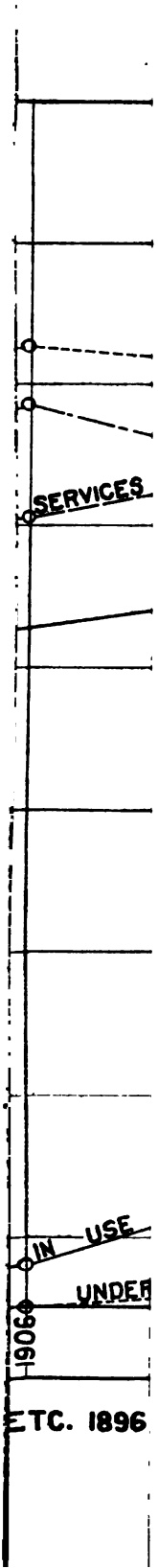
Once more I wish to extend my thanks to the employees of the department, and especially to the heads of the various divisions and subdivions for the excellent work accomplished.

Very respectfully, your obedient servant, W. A. McFarland,
Superintendent, Water Department.

Capt. E. M. Markham,
Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner, District of Columbia.

Table I.—*Statement of cash account of the water fund, District of Columbia, for the fiscal year ended June 30, 1912, as shown by the books of the Auditor of the District of Columbia.*

Balances July 1, 1911:		
In Treasury of the United States	$80,209.83	
In hands of disbursing officer, District of Columbia	6,586.37	
In hands of the collector of taxes, District of Columbia	402.22	
		$87,198.42
Receipts:		
Water rents	545,405.47	
Taps and stop cocks	11,438.65	
Water-main taxes, principal	119,216.49	
Interest on same	3,242.32	
Sale of old material	2,817.50	
		682,120.43
Cash repayments:		
Salaries, revenue and inspection branch, 1912	8.89	
Salaries, distribution branch, 1912	6.30	
High service, 1912	5,247.57	
High service, 1911	6.12	
		5,268.88
Transfer vouchers, salaries, 1911	11.03	
Salaries, distribution branch, 1912	2,103.75	
General expenses, 1912	43.17	
High service, 1912	103,014.56	
		105,172.51
		879,760.24


SERVICES
IN USE
UNDER
1906
ETC. 1896

Expenditures:		
Appropriation, 1912—		
Salaries, revenue and inspection branch	$31,093.32	
Salaries, distribution branch	52,535.54	
Contingent expenses	4,850.36	
General expenses	34,068.84	
High service	622,378.17	
Refunds	1,736.21	
Reimbursement of United States and District of Columbia general fund, account of advances for water meters	18,904.80	
		$765,567.24
Appropriation, 1911—		
Contingent expenses	338.87	
General expenses	3,624.07	
		3,962.94
Balances June 30, 1912:		
In Treasury of the United States	99,396.22	
In hands of disbursing officer, District of Columbia	10,205.22	
In hands of the collector of taxes, District of Columbia	628.62	
		110,230.06
		879,760.24

TABLE II.—*Statement of the operating expenses of the water department for the year ended June 30, 1912.*

Heads of expenditure.	Salaries and per diem labor.	Material expended, cuts to pavements transportation, and items charged direct.	Total expenditures.
Superintendence and engineering	$23,265.53	$4,669.31	$27,934.84
Care of property and grounds	23,798.31	2,762.07	26,560.38
Maintenance and repair of fire hydrants, public hydrants, fountains, and valves	18,563.17	10,261.74	28,824.91
Maintenance and repair of reservoirs	8,182.79	4,527.61	12,710.40
Public hydrants and fountains installed	429.55	413.67	843.22
Water mains laid	75,971.48	178,637.10	254,608.58
Leak service	15,183.52	5,125.29	20,308.81
Operating telephone system, and rentals	3,087.13	795.60	3,882.73
Department stables and hauling account	28,716.13	9,117.63	37,833.76
Inspection of pipe and fittings	1,741.25	28.29	1,769.54
Office of the water registrar, District of Columbia	44,924.08	3,392.20	48,316.28
Installing water meters, and maintenance and repair thereof	18,643.21	57,478.21	76,121.42
Repair and inspection of service pipes	26,228.65	3,872.11	30,100.76
Tapping water mains	3,118.06	4,881.91	7,999.97
Office of the superintendent (clerical force)	11,957.51	1,141.80	13,099.31
Pitometer division (detection of leaks)	26,982.50	7,712.85	34,695.35
Tests and experiments	5,753.66	153.73	5,907.39
Shopwork	12,613.23	6,649.85	19,263.08
Operating pumping engines, Bryant Street station	20,386.03	18,740.55	39,126.58
Deposit work (repaid to the department)	5,071.32	9,032.83	14,104.15
Replacement of fire hydrants, public hydrants, and fountains, lowering mains, etc	10,190.55	18,111.86	28,302.41
New buildings and extensions	3,384.18	3,921.75	7,305.93
Employees of other departments of the District of Columbia paid from water-department funds	6,504.44	537.66	7,042.10
Miscellaneous expenditures for freight, advertising, telegrams, etc	4.12	155.76	159.88
Miscellaneous hauling, not otherwise charged	.....	1,871.38	1,871.38
Total	394,700.40	353,992.76	748,693.16
Less credit for transportation furnished by department stables	27,732.75	8,719.24	36,451.99
Net charges	366,967.65	345,273.52	712,241.17

Charged to general account, viz:	
New work (56.6 per cent)	$403,017.01
Operating expenses (29.1 per cent)	207,427.16
General repairs (10.1 per cent)	72,217.97
Replacement of old work (4.2 per cent)	29,579.03
Total (100 per cent)	712,241.17

TABLE III.—*Statement of the distribution system, including mains laid by the United States, the District of Columbia, and on account of repayment work.*

	In service June 30, 1911.	Laid during year ended June 30, 1912.	Abandoned during year June 30, 1912.	In service June 30, 1912.
75-inch diameter ..... linear feet	600	.....	.....	600
48-inch diameter ..... do	44,225	12	18	44,219
42-inch diameter ..... do	23	.....	.....	23
36-inch diameter ..... do	58,828	9	5	58,832
30-inch diameter ..... do	53,216	9	.....	53,225
24-inch diameter ..... do	21,671	.....	.....	21,671
20-inch diameter ..... do	77,272	18,169	37	95,404
16-inch diameter ..... do	2,656	11,422	4	14,074
12-inch diameter ..... do	308,915	17,837	2,172	324,580
10-inch diameter ..... do	9,026	11	.....	9,037
Total trunk lines ..... do	576,432	47,469	2,236	621,665
8-inch diameter ..... do	493,723	88,348	435	581,636
6-inch diameter ..... do	1,470,064	5,873	2,268	1,473,669
4-inch diameter ..... do	145,797	4,119	595	149,321
3-inch diameter ..... do	76,817	1,976	410	78,383
Grand total ..... do	[1] 2,762,833	147,785	5,944	2,904,674
Stop valves	7,384	945	260	8,069
Fire hydrants	2,903	302	144	3,061
Public hydrants	217	17	19	215
Public sanitary fountains	6	3	.....	9
Public horse fountains	140	8	1	147
Public wells	58	.....	.....	58

[1] 11,338 linear feet of 1¼-inch to 2½-inch diameter, in service June 30, 1911, not taken up in this statement.

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912.*

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
Alley, square 183	3	152.25	$51.31	$96.62	$147.93
Alley, square 2604	3	184.08	58.19	78.42	136.61
Alley, square 870	3	53.15	37.25	63.80	101.05
Alley, square 2107	3	132.33	45.69	64.26	109.95
Alley, square 701	4	96.40	32.38	45.36	77.74
Alley, square 236	4	259.93	100.75	238.40	339.15
Alley, square 1073	4	270.31	95.49	124.71	220.20
Milwaukee Place SE., west from Nichols Avenue	4 8 20	380.90 21.35 4.25	143.50	221.06	364.56
Alley, square 175	4	106.99	35.00	119.81	154.81
Alley, square 992	4	299.22	71.00	226.36	297.36
Alley, square 2510	4	60.77	24.25	20.54	44.79
Alley, square 2558	4	23.35	9.62	36.87	46.49
Alley, square 567	3 4	2.20 133.60	72.13	119.34	191.47
Alley, square 234	4	38.85	33.87	50.99	84.86
Alley, square 2558	4	68.32	37.87	22.38	60.25
Alley, square 265	6 4	2.25 221.20	113.11	112.35	225.46
Alley, square 2670	4 6	191.05 4.29	50.81	170.85	221.66
Alley, square 758	4 8	255.50 4.25	79.36	285.17	364.53
Alley, square 859	4	99.05	51.93	110.15	162.08
Alley, square 75	4	178.57	57.31	93.23	150.54
Alley, square 199	4 8	269.95 2.15	115.75	293.75	409.50
Phelps Place NW., south from Bancroft Place	6	194.53	95.20	125.95	221.15
Alley, square 617	4 6	3.66 147.13	46.56	133.92	180.48
Grant Place NW., west from 9th St	6	171.55	107.76	295.03	402.79
D St. SE., west from 3d St	6	29.80	44.62	34.90	79.52
17th St. NE., between East Capitol and A Sts	8	567.70	187.32	438.07	625.39
A St. NE., between 16th and 17th Sts	8	193.53	153.37	176.57	329.94
Nebraska Avenue NW., between Ordway and Newark Sts.; 45th St. NW., between Newark and Lowell Sts.; 46th St. NW., between Lowell and Klingle Sts	6 8	2.32 1,937.10	595.56	1,585.04	2,180.60

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912*—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
Rhode Island Avenue NE., between 20th and 22d Sts	8	710.06	$180.74	$545.26	$726.00
Naylor Road SE., west from 25th St.; 25th St. NE., between Naylor Road and T St.; T St. NE., west from 25th St	8	1,217.12	308.57	1,013.78	1,322.35
Buchanan St. NW., east from Georgia Avenue; 9th St. NW., south from Buchanan Street	8	532.59	145.87	420.89	566.76
14½ St. NE., between C and D Sts	4 6 8	6.95 8.30 436.93	189.12	509.17	698.29
Warren St. NW., west from Nebraska Ave	6 8	6.33 609.73	276.13	549.17	825.30
6th St. NW., north from Aspen St	8	230.20	62.44	199.93	262.37
Kennedy St. NW., between 7th and 8th Sts	8	484.25	105.68	323.55	429.23
Madison St. NW., west from 9th St	8	405.14	108.87	266.68	375.55
Jefferson St. NW., east from Georgia Ave	8	137.63	53.19	142.83	196.02
47th St. NW., north from Fessenden St	8	126.93	62.75	147.50	210.25
Woodley Road NW., east from 27th St.; 27th St. NW., north from Woodley Road	8	627.53	152.31	479.76	632.07
E St. NE., east and west from 18th St	8	271.02	60.69	302.73	363.42
New Hampshire Ave. NW., between Princeton St. and Georgia Ave	8	446.65	220.13	374.96	595.09
D St. NE., between 14½ and 15th Sts	8	255.35	52.99	133.30	186.29
11th St. SE., between B and C Sts	8	457.65	172.82	347.42	520.24
Whittier St. NW., east from 1st St	8	210.78	136.55	302.83	439.38
Kilbourne St. NW., between 18th and 19th Sts	8	491.99	219.52	446.75	666.27
Butternut St. NW., between 5th and 6th Sts	6 8	5.25 443.63	208.38	407.47	615.85
Huntington St. NW., east from 41st St	8	601.10	164.13	400.35	564.48
Rhode Island Ave. NE., between Lincoln Ave. and Summit Place; V St. NE., between Summit Place and 2d St	8	1,095.07	584.94	1,042.28	1,627.22
Maryland Ave. NE., between 8th and 9th Sts	6 8	5.05 346.90	201.89	334.52	536.41
5th St. SE., between Alabama Ave. and Trenton St.; Savannah St. SE., east from 4th St.; 6th St. SE., between Alabama Ave. and Savannah St.; 4th St. SE., between Nichols Ave. and Savannah St	4	2,672.25	863.93	2,082.22	2,946.15
Esther Place SE., between Nichols Ave. and Raleigh St.; Brothers Place SE., between Esther and Waclark Places	8	662.66	224.69	565.31	790.00
22d St. NE., between Lawrence and Otis Sts	8	926.87	315.75	679.40	995.15
Portland St. SE., between 8th St. and Nichols Ave	8	814.55	260.95	777.22	1,038.17
42d St. NW., between Chesapeake St. and River Road	8	357.05	64.25	295.06	359.31
Nichols Ave. SE., between Alabama Ave. and Esther Place	8	142.13	41.38	73.16	114.54
Naylor St. SE., west from Minnesota Ave	6 8	6.25 418.85	171.01	562.39	733.40
Nichols Ave. SE., between Esther Place and Trenton St	8	1,656.13	635.68	1,432.58	2,068.26
S St. SE., west from 24th Place; 24th Place SE., south from S St.; T St. SE., east from 24th Place	4	892.73	395.19	688.92	1,084.11
11th St. NW., south from Columbia Road	8	242.53	138.25	263.20	401.45
Upshur St. NW., between 7th and 8th Sts	8	527.92	245.56	476.92	722.48
Kentucky Ave. SE., north from C St	6 8	6.66 179.98	81.44	203.87	285.31
Ingomar St. NW., west from 30th St	8	190.50	98.75	215.85	314.60
Trenton St. SE., west from 5th St	8	228.80	87.00	164.04	251.04
Galena Place NW., between Conduit Road and Sherrier Place	8	289.15	102.69	286.78	389.47
7th St. SE., between Alabama Ave. and Orange St	8	1,176.01	415.43	986.16	1,401.59
Brothers Places SE., between High View and Waclark Places; Raleigh Place north and south from High View Place	4 8	30.65 685.88	397.24	865.74	1,262.98
8th St. NW., south from Jefferson St	6 8	8.17 189.75	70.69	158.55	229.24
Sherman Ave. NW., between Euclid and Fairmont Sts	4	360.91	120.50	309.50	430.00
Blair Road NW., north from Aspen St.; Aspen St. NW., between Blair Road and Laurel St.; Laurel St. NW., north from Aspen St	4	1,181.55	269.56	748.21	1,017.77
16th St. SE., between East Capitol and A Sts	6 4	11.72 473.48	237.18	489.96	727.14
Oregon Ave. NW., between 1st Place and North Capitol St.; New Hampshire Ave. NE., between North Capitol and 1st Sts	4	1,201.95	272.65	926.80	1,199.45

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912*—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
3d St. NE., between R and S Sts	6 8	21.53 576.30	$342.56	$497.92	$840.48
Naylor Road SE., south from Railroad Ave	8	702.96	84.94	428.13	513.07
New Hampshire Ave. NW., south from Upshur St	8	60.67	27.81	95.78	123.59
East Capitol St., east from 14th St	6 8	6.48 317.30	111.26	232.83	344.09
Randal St. NE., east from Mills Ave	8	423.40	180.43	427.37	607.80
Nichols Ave. SE., south from 1st St	8	555.65	200.56	423.33	623.89
Brentwood Road NE., south from 16th St	8	491.08	123.07	393.63	516.70
S St. SE., between 13th and 14th Sts.; 13th St. SE., between S St. and Good Hope Road	6 8	8.45 948.15	189.31	790.09	979.40
C St. SE., west from 1st St	8	101.52	86.25	92.57	178.82
18th St. NE., between Lawrence and Monroe Sts	8	339.71	146.32	351.14	497.46
Davenport St. NW., between 47th and 48th Sts	8	463.02	82.56	381.03	463.59
17th St. NW., between Kalorama Road and Crescent St	6 8	13.15 484.91	145.12	465.93	611.05
Ontario Road NW., north from Florida Ave	8	421.14	99.69	383.41	483.10
Newark St. NW., east from 33d St	8	168.25	78.88	204.19	283.07
W St NW., west from Massachusetts Ave.; intersection of Massachusetts Ave. and California St. NW	8	1,370.88	351.37	1,015.77	1,367.14
Upsal St. SE., between 1st St. and Horner Place; Horner Place SE., between Upsal St. and Wilmington Place; Wilmington Place SE., east from 1st St.; 1st St. SE., between Wilmington Place and Upsal St	8	1,337.72	336.43	997.98	1,334.41
Brentwood Road NE., east of Central Ave	8	396.45	105.19	316.63	421.82
Summit Place NE., between Uhland Terrace and V St.; Uhland Terrace NE., between Summit Place and 2d St.; 2d St. NE., between Uhland Place and V St.; V St. NE., west from 2d St	8	899.98	362.17	772.36	1,134.53
Willow St. NW., north from Aspen St	8	246.40	75.06	215.58	290.64
Massachusetts Ave. NW., between Wisconsin Ave. and Observatory Circle; crossing of Massachusetts Ave. NW., opposite 35th Place; Fulton St. NW., between Massachusetts and Wisconsin Aves.; 36th Place NW., between Massachusetts Ave. and Davis St.; 36th St. NW., from Massachusetts Ave. to a point south of Davis St.; 35th Place NW., between Massachusetts Ave. and Edmunds St.; 32d St. NW., between Cleveland Ave. and Woodland Drive; Davis St. NW., between Wisconsin Ave. and Observatory Circle; Edmunds St. NW., between 36th St. and Massachusetts Ave.; Observatory Circle NW., from Massachusetts Ave. to a point south of Davis St.; Woodland Drive NW., between 31st Place and 32d St	8 12	10,788.06 6.70	3,569.70	9,228.96	12,798.66
45th St. NW., between Klingle and Lowell Sts	8	392.28	59.50	223.46	282.96
Water St. NW., east from 22d St.; 23d St. NW., between C and D Sts.; D St. NW., east from 23d St	6 8	13.65 934.67	359.06	812.70	1,171.76
Quackenbush St. NW., west from 2d St.; 2d St. NW., between Nicholson and Quackenbush Sts.; Nicholson St. NW., between 1st and 2d Sts.; 1st St. NW., between Milmarson and Nicholson Sts.; Milmarson St. NW., between North Capitol and 1st Sts.; North Capitol St. (west side), between Kennedy and Milmarson Sts.; Kennedy St. NW., between North Capitol and 1st Sts.; 1st Place NW., between Oregon Ave. and Kennedy St	8	5,178.20	845.27	3,514.21	4,359.48
Klingle St. NW., between 45th and 46th Sts	8	702.04	219.12	577.79	796.91
Summit Place NE., between Uhland Terrace and U St.; U St. NE., between Summit Place and 2d St	8	637.24	249.94	587.69	837.63
High View Place SE., between Raleigh Place and Nichols Ave	8	655.12	177.25	522.09	699.34
Princeton Place NW., between New Hampshire and Georgia Aves	8	209.56	52.56	197.20	249.76
8th St. NW., south from Buchanan St	8	154.58	58.00	112.08	170.08
Rhode Island Ave. NE., between 22d and 24th Sts	8	847.45	239.94	598.75	838.69
Fessenden Place NW., between Wisconsin Ave. and 41st St	8 12	544.19 3.65	243.24	475.37	718.61

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912*—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
Raleigh Place SE., between Nichols Ave. and 7th St	8	562.85	$239.25	$445.56	$684.81
Quebec St. NW., between Georgia Ave. and Warder St	8	883.74	313.43	746.05	1,059.48
Kearney St. NE., between 16th and 17th Sts	8	295.03	112.69	287.87	400.56
C St. SE., west from 17th St	8	184.76	86.44	147.23	233.67
24th St. NW., north from N St	8	168.25	175.13	158.50	333.63
14th St. NW., between Longfellow and Madison Sts	8 12	536.34 31.63	341.19	511.41	852.60
Lincoln Road NE., between Rhode Island Ave. and V St.; V St. NE., east and west from Lincoln Road	8	571.17	247.18	624.97	872.15
Sherman Ave. NW., between Columbia Road and Irving St	8	356.48	87.19	252.44	339.63
Kennedy St. NW., between 1st St. and 1st Place	8	399.25	86.00	277.98	363.98
B St. SE., between 9th and 10th Sts	6 8	8.78 313.15	136.31	278.74	415.05
South Carolina Ave. SE., between Kentucky Ave. and 14th St	6 8	1.50 306.89	140.93	253.57	394.50
Virginia Ave. SE., between 9th and 10th Sts	8	364.27	158.93	312.00	470.93
14th St. NE., between H St. and Maryland Ave.	6 8	12.94 304.18	144.06	352.44	496.50
V St. NE., west from Rhode Island Ave.; Rhode Island Ave. NE., east from V St	4 8	.50 381.70	141.86	297.39	439.25
Broad Branch Road NW., between Runnymede Place and Rittenhouse St.; Runnymede Place NW., east from Broad Branch Road	8 12	632.78 3.40	234.75	584.98	819.73
Bryant St. NW., west from North Capitol St	8	240.65	61.62	142.07	203.69
Kentucky Ave. SE., south from G St.; 16th St. SE., north from Kentucky Ave	8	690.73	215.51	582.18	797.69
Irving St. NE. between 16th and 17th Sts	4 6 8	2.25 1.79 454.89	126.33	384.40	510.73
24th St. NE., south from Irving St	8	350.05	114.18	294.08	408.26
20th St. NW., north and south from Belmont Road; Ashmead Place NW., south from Belmont Road; Belmont Road, east from Ashmead Place	6 8	1.65 1,131.56	500.41	901.15	1,401.56
V St. SE., west from Nichols Ave	6 8	2.80 225.70	93.75	270.01	363.76
Allison St. NW., between 14th and 15th Sts	8	134.82	78.70	143.10	221.80
Newton Place NW., west from Park Place; Park Place NW., between Manor and Newton Places	8	400.54	161.68	447.78	609.46
South Capitol St., between B and C Sts., west	6 8	9.55 549.45	198.31	471.89	670.20
New Hampshire Ave. NW., between Park Road and Monroe St	6 8	12.90 292.46	169.80	309.18	478.98
Bancroft St. NW., between 23d and 24th Sts.; 23d St. NW., between S and Bancroft Sts	6 8	35.73 890.75	269.68	707.07	976.75
17th St. NE., between Kramer and Gales Sts	6 8	1.50 175.11	84.62	226.19	310.81
Nichols Ave. SE., between Orange St. and south wall of Insane Asylum grounds	4 8	6.70 733.48	286.19	732.33	1,018.52
Sherrier Place NW., east and west of Edmunds Place	4 8	.50 868.80	165.99	708.77	874.76
Georgia Ave. NW., south from Quincy St	6 8	8.15 415.55	153.12	366.85	519.97
New Hampshire Ave. NW., between Taylor and Upshur Sts	8	484.91	302.13	373.94	676.07
Upshur St. NW., between 7th St. and New Hampshire Ave	8	378.34	142.67	275.83	418.50
Park Place NW., between Newton and Otis Places	4 8	.50 325.23	104.24	208.70	312.94
9th St. SE., between Alabama Ave. and Portland St.; Portland St. SE., west from 9th St.	8 12	780.42 3.55	185.94	652.28	838.22
Lowell St. NW., between 34th and 35th Sts	6 8	2.17 629.08	106.18	382.38	488.56
5th St. NE., between M St. and Florida Ave	6 8	1.75 392.65	149.00	446.49	595.49
V St. NW., between 49th St. and Conduit Road	4 8 12	.50 194.30 3.82	96.93	193.20	290.13
New Hampshire Ave. NW., north from Shepherd St	8	172.31	84.06	181.49	265.55
1st St. NE., north from G St	8	271.77	156.70	226.91	383.61
Kalorama Road NW., east from Connecticut Ave	8	197.75	85.13	135.53	220.66
Nicholson St. SE., south from Railroad Ave	8	383.43	78.31	272.52	350.83

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912*—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
Rhode Island Ave. NE., between 5th St. and Baltimore & Ohio R. R.	4	.50	$225.50	$447.05	$672.55
	6	2.00			
	8	599.43			
2d St. SE., between K and L Sts.	6	12.25	125.62	311.13	436.75
	8	347.35			
Wheeler Road SE., between Alabama Ave. and Savannah St.	8	485.23	179.42	367.63	547.05
Brentwood Road NE. between Rhode Island Ave. and 14th St.	8	296.54	80.49	266.53	347.02
Colorado Ave. NW., north from Madison St.	4	4.23	135.43	437.96	573.39
	8	507.77			
Rosedale St. NE., between 16th and 17th Sts.	8	526.73	146.88	340.10	486.98
D St. NE., between 9th and 10th Sts.	6	3.30	129.62	204.30	333.92
	8	309.75			
16th St. NW., south from Kennedy St.	6	7.58	218.39	514.48	732.87
	8	615.99			
South Capitol St., between C and D Sts. SE.	6	15.92	220.29	339.07	559.36
	8	376.24			
7th St. SE., between Potomac Ave. and G St.; Potomac Ave. SE., between 16th and 17th Sts.	8	750.65	221.50	594.28	815.78
Piney Branch Road NW., between Farragut and Gallatin Sts.	3	4.92	189.83	406.92	596.75
	8	444.25			
Hobart Place NW., between Georgia and Sherman Aves.	4	2.60	171.12	413.57	584.69
	6	4.65			
	8	512.10			
Brown St. NW., between Monroe and Newton Sts.	8	218.55	95.75	274.23	369.98
	12	2.95			
I St., between 2d and 3d NE.; 3d St. NE., north and south from I St.	6	7.77	202.75	528.78	731.53
	8	589.45			
	6	1.65			
L St. NE., between 8th and 9th Sts.	8	341.20	141.43	267.45	408.88
Nicholson St. NW., between 1st St. and Blair Road	8	623.58	184.24	498.36	682.60
5th St. NE., between I and K Sts.	8	232.40	68.19	121.05	189.24
Monroe St. NW., between 14th and 17th Sts.	4	38.83	1,082.11	3,023.93	4,106.04
	6	22.05			
	8	48.40			
	12	1,918.56			
	36	4.29			
Alabama Ave. SE., between Nichols Ave. and 8th St.; 8th St. SE., between Alabama Ave. and Portland St.	4	7.88	780.00	2,385.80	3,165.80
	8	554.94			
	12	1,509.34			
Massachusetts Ave. NW., west from 24th St.; Massachusetts Ave. NW., west from Decatur St.	8	197.05	180.25	535.68	715.93
	12	154.09			
Pennsylvania Ave. SE., west from 30th St.	8	12.33	165.36	497.28	662.64
	12	390.90			
Illinois Ave. NW., between Farragut and Hamilton Sts.	6	92.83	195.88	954.11	1,149.99
	12	785.20			
W St. NW., between North Capitol and 1st Sts.	4	7.42	432.96	943.44	1,376.40
	8	6.21			
	12	761.08			
Massachusetts Ave. NW., between 24th and W Sts.	4	24.55	787.18	3,060.82	3,848.00
	8	26.17			
	12	2,463.89			
32d St. NW., between Woodley Road and Cleveland Ave.; Massachusetts Ave. NW., between Garfield St. and 34th Place; Observatory Circle NW., from 34th Place to a point east of 34th St.; crossing of Massachusetts Ave. NW., at Rock Creek Drive.	4	39.00	1,547.78	5,252.51	6,800.29
	8	173.23			
	12	3,555.94			
Alabama Ave. SE., between 8th and 9th Sts.	4	7.90	187.56	620.18	807.74
	8	23.56			
	12	389.91			
Ord St. NE., between 44th St. and Kenilworth Ave.	8	41.48	269.44	1,101.23	1,370.67
	12	797.18			
Wisconsin Ave. NW., between Massachusetts Ave. and Edmunds St.	4	5.70	924.69	2,060.20	2,984.89
	8	5.95			
	12	1,778.83			
Rhode Island Ave. NE., between 20th St. and Mills Ave.	8	15.02	223.93	485.37	709.30
	12	453.25			
Alabama Ave SE., between 9th and 10th Places.	4	.50	163.69	531.09	694
	6	1.90			
	8	29.74			
	12	310.88			
18th St. NW., between D St. and Virginia Ave.; Virginia Ave. NW., between 18th and B Sts.; B St. NW., between Virginia Ave. and 17th St.	4	7.20	856.[illegible]		
	6	141.29			
	8	92.74			
	12	1,273.42			

TABLE IV.—*Statement showing cost of water mains laid during the year ended June 30, 1912*—Continued.

Location.	Size.	Length.	Labor.	Material.	Total.
	Inches.	*Feet.*			
14th St. NE., between Brentwood Road and Franklin St	8	.65	$96.31	$286.83	$383.14
	12	231.87			
Calvert St. Bridge NW	12	22.33	1,013.19	3,333.76	4,346.95
	16	771.02			
Kenilworth Ave. NE., between Gault St. and District of Columbia line	4	50.34	3,216.85	12,103.32	15,320.17
	6	10.85			
	8	206.46			
	12	89.73			
	16	6,196.25			
Wisconsin Ave. NW., between Massachusetts Ave. and Woodley Road	3	17.14	1,194.88	3,259.14	4,454.02
	4	37.55			
	6	27.40			
	8	6.20			
	12	107.86			
	16	1,275.19			
	20	23.45			
Bennings Road NE., between 44th St. and Anacostia Ave	4	97.82	2,917.98	6,494.28	9,412.26
	8	38.79			
	12	2.30			
	16	3,157.61			
Fire hydrants erected in new locations	6	125.51	641.74	1,306.83	1,948.57
	8	156.38			
Connections and blow-offs in various sections	3	50.36	5,715.20	7,860.96	13,576.16
	4	192.72			
	6	951.95			
	8	146.15			
	12	701.97			
	20	17.70			
	30	5.27			
	36	5.01			
	48	12.02			
Special lateral main (1¼-inch to 2½-inch diameter), 17,120 feet			2,552.60	2,644.87	5,197.47
Unfinished water mains, June 30, 1911	8	90.93	20.19	1,390.33	1,410.52
Unfinished water mains, June 30, 1912			1,012.97	3,561.24	4,574.21
General inspection			1,340.00	920.25	2,260.25
Special appropriations.					
Appropriation, act of Congress approved Mar. 2, 1911, for the "Extension of water trunk mains to Congress Heights, D. C.":					
Unexpended balance June 30, 1911 $24,438.67	4	34.20	6,723.70	7,063.77	13,787.47
Expended during year ended June 30, 1912 13,787.47	6	96.97			
	8	288.16			
	12	44.97			
Unexpended balance June 30, 1912 10,651.20	20	5,301.95			
Appropriation, act of Congress approved Mar. 2, 1911, for the "Extension of water trunk mains to Bennings, D. C.":					
Unexpended balance June 30, 1911 $41,682.38	4	100.86	11,248.12	30,321.40	41,569.52
Expended during year ended June 30, 1912 41,569.52	6	153.86			
	8	170.89			
	12	27.63			
	16	16.32			
Unexpended balance June 30, 1912 112.86	20	12,822.10			
Total			75,971.48	178,637.10	254,608.58

Table V.—*Statement of length and cost of water mains laid from July 1, 1878, to June 30, 1912, paid for out of the Water Department funds.*

Year.	48-inch.	42-inch.	36-inch	30-inch.	24-inch.	20-inch.	16-inch.
	Lin. ft.	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft*	*Lin. ft.*	*Lin. ft*
1878			40				
1879							
1880							
1881							
1882							
1883							
1884							
1885							
1886							
1887						4,835	
1888							
1889					2,312	5,140	
1890							
1891							
1892						2,926	2,500
1893							
1894						278	
1895					6,617		
1896					294	8,874	
1897						2,180	
1898							
1899						1,914	
1900			10,902		35	1,282	48
1901							
1902				1,227		203	
1903	2,123		14,601			35	
1904	4,019	23	5,231	6,332	18	8,668	24
1905			2,701	9	42		
1906	8,155		97		40	716	
1907			2,697	3,650	4		48
1908				20	10	98	
1909				13	35	11	
1910						15,601	25
1911				4,384	325	14,136	51
1912	12		9	9		18,165	11,416
Total	14,309	23	36,278	15,644	9,732	85,062	14,112

Year.	12-inch.	10-inch.	8-inch.	6-inch.	4-inch.	3-inch.	Total.	Total cost.
	Lin. ft.	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft.*	*Lin. ft*	*Lin. ft.*	
1878	3,719			12,781	30		16,570	$14,846.20
1879	7,409			8,516	1,397		17,322	19,436.03
1880				3,024			3,024	
1881				3,709			3,709	3,110.70
1882				1,920			1,920	1,626.43
1883	1,625		26	4,084			5,735	8,073.70
1884	1,038			8,972			10,010	10,492.51
1885	763			27,766	358	485	29,372	25,865.85
1886	1,938	791		35,192		6,623	44,544	40,025.10
1887	1,124	2,998		30,041	292	7,124	46,414	56,951.00
1888	731			9,123	9,148	3,937	32,939	17,626.63
1889	5,626	2,784		36,742	6,571	8,753	67,928	79,342.16
1890				34,737	2,856	2,855	40,448	19,113.54
1891	5,201			56,893	3,142	11,013	76,249	49,702.65
1892	10,163			88,709	3,342	1,286	108,926	74,733.04
1893	6,473			54,173	8,336	3,458	72,440	56,339.39
1894	39,386			86,632	12,832	2,918	142,046	126,599.55
1895	27,731			103,785	5,442	2,733	146,308	134,502.31
1896	11,873			61,464	1,738	3,262	87,505	89,395.12
1897	6,877			71,266	10,595	992	91,910	77,954.81
1898	7,698		907	52,371	6,735	2,790	70,501	48,661.70
1899	2,220			84,291	4,662	2,701	95,788	65,774.52
1900	157			53,838	4,211	2,116	72,589	114,784.72
1901	10,026			52,018	2,187	935	65,166	47,426.71
1902	14,010			35,481	1,414	1,632	53,967	57,676.33
1903	9,411			32,264	2,004	357	60,795	98,498.90
1904	13,802	68	40,767	2,913	1,745	1,637	85,247	404,294.81
1905	1,014		31,750	1,228	578	2,671	39,993	73,402.12
1906	3,985		34,880	551	781	722	49,927	176,297.98
1907	12,066	6	55,798	2,209	3,081	869	80,428	197,066.91
1908	5,513		50,428	3,279	3,089	1,016	63,453	114,411.42
1909	6,478	4	57,010	4,283	1,692	1,029	70,555	115,701.97
1910	18,875	7	83,787	3,497	2,900	1,292	125,984	214,512.38
1911	27,325		91,569	4,799	5,001	231	147,821	283,266.89
1912	17,837		88,237	2,577	3,692	596	142,550	254,608.58
Total	282,094	6,658	535,159	1,075,128	109,851	76,033	2,260,083	3,172,122.16

NOTE.—11,620 linear feet of 1½ to 2½ inch diameter in this statement for the year ended June 30 1911 omitted in statement for year 1912.

TABLE VI.—*Statement of the average cost per foot for laying water mains for the year ended June 30, 1912.*

	Linear feet.	Cost of labor per linear foot.	Cost of material, cuts to pavements, etc.	Total cost per linear foot laid.
3-inch	521	$0.369	$0.581	$0.950
4-inch	2,994	.375	.765	1.140
6-inch	547	.538	1.078	1.616
8-inch	86,206	.335	.828	1.163
12-inch	14,172	.457	1.385	1.842
16-inch	11,400	.732	2.209	2.941
20-inch	12,822	.904	2.603	3.507

NOTE.—Excessive cost of 3-inch, 4-inch, and 6-inch mains due to having been laid in short sections in alleys and connections necessitating additional labor and material.

TABLE VII.—*Statement of number of public wells in use during the year ended June 30, 1912.*

	Shallow wells.	Deep wells.	Total.
In service June 30, 1911	11	47	58
In service June 30, 1912	11	47	58

REPORT OF THE WATER REGISTRAR.

WASHINGTON, *September 30, 1912.*

SIR: I have the honor to submit the annual report of the revenue and inspection branch of the water department, showing in detail the work accomplished during the fiscal year ended June 30, 1912.

OFFICE WORK.

Accounts audited	143,125
Accounts posted and checked	76,236
Accounts indexed	7,758
Agents' lists made and compared	937
Authority cards examined and filed	3,795
Bills drawn for agents' lists	15,126
Cards assorted and filed	425,000
Cards cancelled:	
Meter	229
Schedule	428
Card records transferred to books	2,605
Cards retired	2,981
Certificates written	1,166
Changes made on records, ratings, etc	1,412
Changes of house numbers on records	799
Checking bills on agents' lists	15,126
Coupons assorted and filed	100,983
Curb cock and box locations recorded	3,139
Curb cocks issued	3,139
Cut-off orders made and recorded	5,496
Delinquent notices made and compared	12,500
Delinquent rent lists made and compared	1,932
Emergency examinations made	1,025
Examination of service pipes recorded	2,562
Files endorsed and returned	273
Files indexed	273
Files received and abstracts made	273
House-to-house leaks recorded	155

Indexes made and checked		24,000
Installation cards made, meter		5,287
Leak notices filed		12,162
Letters and cards received		3,259
Letters and cards sent out		8,423
Letters copied		4,100
Letters indexed		4,100
Listing bills		15,126
Lists indexed		1,500
Meter bills made and checked		34,941
Meter computations		102,454
Meter computations checked		51,276
Meter charges recorded		915
Meter locations platted on cards		40
Meters ordered out:		
Private—		
Burst	16	
Choked	11	
Not registering	235	
For repairs	3	
Frozen	30	
Leaking	38	
Making noise	3	
For test	64	
		400
District of Columbia—		
Burst	76	
Choked	67	
Not registering	831	
For test	22	
For repairs	30	
Frozen	173	
House torn down	25	
Leaking	230	
Making noise	5	
For test, request	8	
		1,467
Meters ordered repaired in place:		
Private	34	
District of Columbia	120	
		154
Meter pits, District of Columbia:		
Brought to grade	309	
New pit top installed	17	
Pits relocated	29	
		355
Meters, District of Columbia, out and abandoned		9
Meters, private, ordered raised		7
Meters, District of Columbia, ordered raised		4
Meter-repair slips from pump house recorded		1,684
Meter tests received		3,897
Meter tests recorded		3,897
New meter account cards made and checked		5,050
New meter accounts opened		5,050
New meter reading cards made		6,245
New schedule account cards made and checked		47,542
New schedule accounts opened		2,708
Notices of leaks to agents, etc		5,962
Notices to plumbers for meter tests		164
Permits for use of fire hydrants		101
Permits for water for building purposes		2,673
Plats made		174
Plats made of tap locations		2,040
Plumbers' permits examined		1,500
Refunds forwarded		246
Reports checked		6,217

Reports made, weekly	52
Requests for bills filed	1,566
Requests for bills indexed	1,566
Requisitions made	42
Schedule accounts examined	211,402
Schedule bills made and checked	65,672
Services abandoned entered on record	1,638
Special examination slips made and filed	5,454
Special leak examinations recorded	36,529
Special examinations entered	8,454
Tabulating accounts for record	5,275
Taps issued	2,737
Tap locations recorded	2,737
Tap record cards made, new	5,395
Tap records entered	2,737
Time records entered	303
Turn-on orders made	2,921
Turn-on orders recorded	2,921
Turn-on and turn-off orders filed	8,417
Vacant house lists made	129
Water-main measurements given	10,972
Work orders made	8,767

FIELD WORK, GENERAL.

Bills delivered		37,734
Delinquent notices served		5,590
House-to-house leaks found		155
Meters read		102,454
New services passed		2,582
Notifications for nonpayment		784
Plats made of meter locations		40
Repairs to service-pipes passed		1,973
Special examinations		47,290
Taps made:		
For services	2,582	
Water department (general)	155	
		2,737

FIELD WORK, LEAKS AND WASTES.

Abandoned services cut off at main	1,638
Cut off at box, leak	1,760
Cut off at main, leak	101
Cut off by request	622
Cut off, vacancy	1,755
Cut off, nonpayment, meters	185
Cut off, nonpayment, schedule	339
Cuts repaired	1,132
Leaks found on mains	8
Locating taps and stop-cock boxes	6,162
Miscellaneous work in connection with leaks, examinations	14,410
Special examinations	3,650
Special leak examinations:	
First inspection	9,753
Second inspection	26,776
Turned on by request	2,598

FIELD WORK, SERVICE PIPES, ETC.

Connecting services	133
Leaks repaired	12
New curb cocks installed	25
Pressure regulators installed	2
Repairs made to stop-cock boxes	1,854

FIELD WORK, WATER METERS.

Meters taken out:		
Private—		
Burst	16	
Choked	11	
Not registering	235	
For repairs	3	
Frozen	30	
Leaking	38	
Making noise	3	
For test	64	
		400
District of Columbia—		
Burst	76	
Choked	67	
Not registering	831	
For test	22	
For repairs	30	
Frozen	173	
House torn down	25	
Leaking	230	
Making noise	5	
For test, request	8	
		1,467
Meters repaired in place:		
Private	30	
Reversed	4	
		34
Meter pits, District of Columbia:		
Brought to grade	309	
New pit tops installed	17	
		326
Meter pits, District of Columbia, relocated		29
Meters repaired in place, District of Columbia	102	
Reversed	18	
		120
Meters:		
District of Columbia, out and abandoned		9
Private, raised		7
District of Columbia, raised		4
Installed		4,797
Municipal meters installed		76
Miscellaneous inspections		6,533

ORGANIZATION.

For convenience in handling the work the force is subdivided as follows:

Subdivision 1 (*W. R. Chapell, in charge*).—Posting, checking, auditing accounts, making bills, preparing cut-off notices, notifications for nonpayments, and general supervision of all work pertaining to flat-rate accounts.

Subdivision 2 (*E. H. Grove in charge*).—Meter accounts, inspection of new services, tapping water mains, making bills, regular and excess consumptions, accounts in arrears, nonpayments, reports, records, refunds, leaks, repairs to services, correspondence, and general supervision of all matters pertaining to meter accounts.

Subdivision 3 (*J. A. Mudd in charge*).—The work of this subdivision consists in verification of information furnished by the owners of premises where water is to be introduced, as to house, lot numbers, and rating, and also changes of street names and house numbers and entry of same on the office records.

Subdivision 4 (*C. F. Eckloff in charge*).—The duties of this subdivision consist in the examining of all permits for the introduction of water, the issuing of taps and stopcocks, and permits for use of water for building purposes.

Subdivision 5 (*H. C. Schaeffer in charge*).—Records for meter installation, repairs, cost of maintenance, meter computations, readings, and inspections in field.

Subdivision 6 (*A. Marks in charge*).—Leak examinations, cutting off and turning on water, locating services, repairs and connecting of services, and repairs to stopcock boxes.

Subdivision 7 (*W. F. Sullivan in charge*).—Meter installation and removal of meters for repairs.

LEAKS AND WASTES.

Particular attention has been paid to the cutting off of abandoned water services at tap in main, and the cutting off of vacant houses, and locating lost services during the past year, in order to prevent leaks and wastage of water.

During the latter part of the year this work has been greatly facilitated by the putting in service of an electrical instrument invented by Mr. E. H. Grove, an employee of this office, for locating underground pipes.

The patent for this device is now pending, in which a shop-right license is given the District of Columbia to make and use the same without cost.

By the use of this instrument the line of pipe and tap in main can be absolutely located, thus avoiding unnecessary excavation and the cutting of improved surfaces in roadways and sidewalks, and thereby saving a considerable amount of money in labor, time, and cost of resurfacing.

The instrument has more than paid for itself in the first few jobs in which it was used, which proves it to be invaluable for such work.

One thousand six hundred and thirty-eight abandoned water services were cut off at the tap in the main during the year.

One thousand seven hundred and seventy-five vacant premises were cut off.

SERVICE CONNECTIONS.

Two thousand five hundred and eighty-two new service connections were made, inspected, and locations recorded during the year.

One thousand nine hundred and seventy-three repairs, etc., to water services and appurtenances were inspected and recorded.

In order to give prompt action to the inspection of service pipes it has been necessary at times, owing to the great increase in work of this character, to send out as many as four men to assist the inspector having this work in charge. It is the aim of the office to make such inspection within one hour of the time specified by the plumber. These men, while not so engaged, are employed on clerical work in the office.

WATER METERS.

Five thousand and thirty-six water meters were installed during the year and 66 were discontinued, making the total number now in use 23,912.

To facilitate the work in connection with the meters in service, the following system has been adopted and has been in successful operation since its inception:

Meters are separated under these heads, viz: Private meters where the consumption exceeds 100,000 cubic feet per quarter; private meters where the consumption does not exceed 100,000 cubic feet per quarter; fire service meters; District meters that have not exceeded the maximum allowance for the annual minimum payment; District meters that have exceeded the maximum allowance for the annual minimum payment; District meters in premises where leaks were found; District meters in municipal institutions.

Private meters in business establishments that exceed 100,000 cubic feet a quarter are read weekly, and a statement of the consumption is recorded on a card provided by this office, which is posted in some convenient place on the premises. This plan has proved most satisfactory to the consumer and the office, inasmuch as it has reduced the number of arguments in regard to large bills to a minimum. By this method the owner of the place is kept in touch with his account from week to week, which has resulted in prompt action on his part in cutting down all waste of water.

Private meters where the consumption does not exceed 100,000 cubic feet per quarter are read nine times a year. If the condition shows an extraordinary use of water an examination is made for leaks, and if any are found the responsible party is notified.

Detector meters are read monthly, and if any show registration an investigation is immediately made as to the cause, and explanation demanded.

District meters in municipal institutions are read monthly, and the responsible department is notified if leaks or wastes are found.

District meters installed on service pipes supplying private residences are read at frequent intervals, averaging about nine times a year. Where the rate of consumption is much in excess of the proportion based upon the minimum payment in advance, special reading cards are made out and these premises kept under constant observation. Where leaks are found in metered premises the occupant and agents (if they have a request filed for such information) are notified, and in case no attention is paid to such warnings, and the leaks are large enough to justify such action, the supply is discontinued until the proper repairs are made. For convenience in hand-

ling such accounts houses are divided into three classes: First, large houses where considerable water is required. In such cases, if abnormal use of water is indicated by the meter, the occupant is notified by card to that effect and the case is dropped. Second, medium sized houses. If the consumption is found to be excessive a notice is sent to that effect, and if after a reasonable time no change is observed an examination is made, and if any leaks are found the occupant is again notified that if this condition is allowed to continue large bills will naturally result. Third, small houses which are occupied in many instances by irresponsible parties. In such cases where an extraordinary wastage of water is found, the supply is discontinued after one notice has been served.

In the first two classes the notices are generally met with prompt action on the part of the occupant or agent; but in the latter class considerable trouble is experienced as the principal waste can be traced to these small houses.

INSTALLATION OF METERS.

The work during the year consisted mainly in metering the first high service area and the new services installed in the territory covered in previous years in the second, third, and fourth high service areas and from Pennsylvania Avenue to river between Four-and-a-half and Seventh Streets SW., and Seventh Street both sides, between Pennsylvania Avenue and Florida Avenue NW.

North of Florida Avenue, with few exceptions, all the services are of lead and were easily located, greatly facilitating the work. In the older parts of the city, however, considerable trouble was experienced in finding the services, which were for the most part of wrought iron and in such condition that at least 20 per cent of them had to be repaired before meters could be installed.

The following shows the average cost of installing a meter:

Meter	$5.35
Material	3.60
Labor	2.41
Total	11.36

The following shows the force engaged on installation:

In charge, master plumber[1]	1
Plumbers	3
Laborers	19
2-horse wagon	1
1-horse wagons	2

The following additional work was performed in connection with the installation of meters: Adjusting meters to proper grade, adjusting stopcock boxes to grade, removing meters for test, etc., reporting cuts in improved pavements, repairing minor leaks on service pipes and setting of temporary meters, etc.

REVENUES.

The table of comparative revenues shows an increase over the previous year of $48,666.73.

TABLES.

Table 1 shows statement of collection.
Table 2 shows comparative statement of revenues.
Table 3 shows number of water meters in service.
Table 4 shows number of water meters repaired.
Table 5 shows consumption of water in buildings owned and controlled by the District of Columbia.
Table 6 shows consumption of water in premises which receive a free allowance.
Table 7 shows general information.

CARD-RECORD SYSTEM.

There are about 400,000 office records kept under the card system.

[1] As this man also has charge of taking out and resetting meters for test and repairs and repairs to service pipes, only half of his time and the cost of the horse and wagon used by him is properly chargeable to installation.

PRINTING.

There were 754,354 blank forms, cards, etc., printed during the past year, covering practically all the work of this character required by the water department.

Since this work has been undertaken by this office it has resulted in great economy in time and a considerable saving in cost.

WATER RATES.

There has been no change in the water rates during the past year. The rate for domestic purposes is charged according to stories and front feet. On all tenements two stories high with a front width of 16 feet or less, $4.50 per annum. For each additional front foot or fraction thereof greater than one-half, 30 cents.

For each additional story or part thereof, one-third of the charges as computed above.

Business premises are rated according to their size, class, and volume of business, and rate from $1 to $25. If the flat rate on a business establishment reaches $25 or more, the owner or occupant is required to install a water meter at his own expense.

The meter rate is 3 cents per 100 cubic feet with a minimum charge of $4.50 per annum, which allows the use of 15,000 cubic feet, or 112,200 gallons; water used in excess of this amount is charged for at the above rate.

INCREASE IN WATER RATES.

The commissioners by an order dated September 30, 1911, increased the water rates to become effective July 1, 1912.

On unmetered premises the flat rate will be $5 per annum, which is based on premises two stories high, with a front width of 16 feet or less.

For each additional front foot or fraction thereof greater than one-half, 31 cents.

For each additional story or fraction thereof, one-third of the charges as computed above.

Business premises are rated according to their size, class, and volume of business and rate from $1 to $25. If the flat rate on a business establishment reaches $25 or more, the owner or occupant is required to install a water meter at his own expense.

The meter rate will be $4.50 per annum, which allows the use of 7,500 cubic feet, or 56,100 gallons. All water used in excess of this amount will be charged for at the rate of 4 cents per 100 cubic feet.

CONDITION OF WORK.

There was a large increase in business over that of the previous year, but notwithstanding this fact the work was practically up to date at the close of the year.

This result was made possible by the faithful cooperation of the employees, their readiness to meet the exigencies of the service by frequently working after hours, for which I now take occasion to express my appreciation.

Very respectfully,

GEO. W. WALLACE,
Water Registrar.

The SUPERINTENDENT, WATER DEPARTMENT.

TABLE 1.—*Statement of collections.*

Water rents:		
Schedule	$279,024.57	
Meters	261,607.91	
		$540,632.48
Water-main assessments		122,458.81
Taps and stopcocks		11,438.65
Building purposes	4,772.99	
Sale of old material, etc	2,817.50	
		7,590.49
		682,120.44

TABLE 2.—*Comparative statement of revenues.*

Fiscal year.	Water rents.	Water-main assessment.	Taps and stopcocks.	Miscellaneous.	Total revenues.
1898	$264,884.48	$58,152.56	$6,910.65	$1,104.42	$330,952.11
1899	276,065.54	62,937.43	6,327.00	1,545.15	346,875.12
1900	286,257.63	53,420.70	5,208.15	4,452.53	349,339.01
1901	303,557.19	56,359.72	6,140.85	3,064.39	369,122.15
1902	318,404.39	65,962.47	6,368.16	4,659.00	395,394.02
1903	326,789.26	70,880.32	6,787.77	3,628.18	408,085.53
1904	340,131.72	51,575.87	6,522.67	2,839.66	401,069.92
1905	349,264.26	32,192.77	8,603.80	5,737.69	395,798.52
1906	359,699.35	34,352.70	9,100.00	2,633.85	405,785.90
1907	466,452.19	51,313.97	8,487.10	8,697.66	535,950.92
1908	477,306.64	57,462.39	8,688.10	4,050.32	547,507.95
1909	498,598.31	57,654.06	10,674.15	5,826.22	572,752.74
1910	505,488.52	76,905.15	11,794.78	5,995.91	600,184.36
1911	517,408.69	101,987.53	8,924.35	5,133.13	633,453.70
1912	540,632.48	122,458.81	11,438.65	7,590.49	682,120.44
1913[1]	679,000.00	110,000.00	10,000.00	6,000.00	805,000.00
1914[1]	714,000.00	110,000.00	10,000.00	6,000.00	840,000.00

[1] Estimated.

TABLE 3.—*Water meters.*

	½-inch.	⅝-inch.	¾-inch.	1-inch.	1½ and 1 inch.	2½-inch.	3-inch.	4-inch.	6-inch.	8-inch.	Total.
American		167	5	10	3						185
Crown		4	13	35	29	13	9		2		105
Enarc			11	12	14	4					41
Empire		48	1		1	1	2	1			54
Eureka								1			1
Gem						25	18	7	1		51
Hersey, Model F		13,464									13,464
Hersey Detector							6	6	8	2	22
Hersey, torrent						2					2
Hersey			281	30	88	23	7	1	1		431
Keystone (Pittsburgh)		160	32	40	32	20	21	3			308
Keystone, Model W		2,444									2,444
King		166			1						167
Lambert		1,116	182	110	93	46	13	6	1		1,567
Nash	2	153	525	500	276	120	32	13	2		1,623
Niagara		1	32	25	33	15					106
Standard					4	1					5
Thomson	1	2	46	60	45	28	1	2			185
Trident		2,514	40	67	67	13	2				2,703
Trident, compound							2	1			3
Trident, crest							5	8			13
Union			29	37	8	9		1	1		85
Worthington		241	12	16	8	13	8	3			301
Worthington, Model D		41									41
Total											23,907
Registers											5
Total meters and registers											23,912

Meters installed to June 30, 1911		18,937
Meters installed in private residences by District of Columbia, 1911–12		4,773
Meters installed by private parties		163
Total		23,973
District of Columbia meters abandoned, 1911–12	32	
Private meters abandoned, 1911–12	34	
		66
Total number of meters in service June 30, 1912		23,907
Registers		5
Total		23,912
Water services		66,159
Water services, metered		23,912
Water services, unmetered		42,247
Percentage of services metered		36

TABLE 4.—*Meters repaired.*

	⅝-inch.	¾-inch.	1-inch.	1½-inch.	2-inch.	3-inch.	4-inch.	Total.
Meters repaired	1,252	143	98	49	11	3	5	1,561
Abutments	4		1		1			6
Bonnets	3	8	3	1				15
Bottom cases	70	3	1					74
Bottom plates	7							7
Dial plates	1	6	3					10
Disks	694	57	35	9		1		796
Disk chambers	4							4
Disk shafts	1	14	14	2	1			32
Flange bolts	302	76	50	22				450
Gaskets	268	41	13	3				325
Gears	12		3					15
Glass	43	2	1	3				49
Lids	20	5	2	2	1			30
Pointers	8			1				9
Registers	143	2		1				146
Register spindles	11							11
Stuffing box shafts	2							2
Top cases	11	11	11	1				34
Train gears (intermediate)	104	57	20	23	6		3	213
Total parts	1,708	282	157	68	9	1	3	2,228

Meters in service, including registers 23,912
Cost of labor and material for maintenance $7,487
Average cost per meter for maintenance $0.31

NOTE.—The increased cost of maintenance was due to the unusually cold weather this winter. Four hundred and twenty-six meters were damaged by frost, necessitating the use of 1,272 new parts in excess of those furnished during the fiscal year 1911. This condition was due to the fact that the service pipes were not laid at the proper depth, thereby causing the meters to freeze.

TABLE 5.—*Meters installed in various buildings owned and controlled by the District government.*

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
SCHOOLS.	*Cu. ft.*			SCHOOLS—continued.	*Cu. ft.*		
Abbott	103,300	1	1	Dent	352,000	1	1
Adams	203,600	1	1	Douglass	217,600	1	1
Addison	428,400	1	1	Eastern High	80,200	1	1
Ambush	181,300	1	1	Eaton	34,500	1	1
Amidon	210,200	1	1	Eckington	212,300	1	1
Armstrong	881,500	1	1	Edmonds	205,300	1	1
Banneker	30,200	1	1	Emery	257,200	1	1
Bell	369,000	1	1	Fillmore	152,700	1	1
Berret	131,700	1	1	Force	748,300	1	1
Birney	122,500	1	1	Fort Reno	9,000	1	1
Blair	110,800	1	1	Franklin	296,000	1	1
Blake	105,000	1	1	French	81,600	1	1
Blow	347,000	1	1	Gage	366,600	1	1
Bowen, A	59,000	1	1	Garnett	366,500	1	1
Bowen, S. J	522,800	1	1	Giddings	239,800	1	1
Bradley	206,200	1	1	Garrison	139,900	1	1
Brent	276,700	1	1	Grant	172,200	1	1
Briggs	220,700	1	1	Greenleaf	106,000	1	1
Brightwood	92,700	1	1	Hamilton	3,500	1	1
Brightwood Park	149,300	1	1	Harrison	135,700	1	1
Brookland	73,800	1	1	Hayes	217,400	1	1
Bruce	204,100	1	1	Henry	200,400	1	1
Bryan	219,300	1	1	Hilton	227,800	1	1
Buchanan	86,100	1	1	Hubbard	165,400	1	1
Business High	1,111,700	1	1	Hyde	220,100	1	1
Carberry	196,500	1	1	Jackson	212,000	1	1
Chevy Chase and annex	284,600	1	1	Jefferson	216,500	1	2
Cleveland	314,600	1	1	Johnson	27,900	1	1
Congress Heights	106,400	1	1	Jones	261,400	1	1
Cook, J. F	126,900	1	1	Ketcham	363,800	1	1
Cooke, H. D	389,100	1	2	Langdon	29,700	1	1
Corcoran	200,300	1	1	Langston	195,700	1	1
Cordoza	138,700	1	1	Lenox	137,900	1	1
Cranch	125,200	1	2	Lincoln	109,200	1	1
Crummell, Alex	235,300	1	1	Logan	135,600	1	1
Curtis	90,400	1	1	Lovejoy	171,500	1	1
Denison	373,900	1	1	Ludlow	337,200	1	1

TABLE 5.—*Meters installed in various buildings owned and controlled by the District government*—Continued.

Class of building.	Annual consumption.	Premises.	Meters.
SCHOOLS—continued.	*Cu. ft.*		
M Street High	545,700	1	1
McCormick	39,300	1	1
McKinley	1,392,400	1	1
Madison	155,700	1	1
Magruder	128,000	1	1
Manual Training	86,000	1	1
Maury	195,000	1	1
Military Road	11,100	1	1
Minor	178,100	1	1
Monroe	278,000	1	1
Montgomery	141,900	1	1
Morgan	229,000	1	1
Morse	173,300	1	1
Mott (new)	505,400	1	1
Mott (old)	209,000	1	2
Orr	83,300	1	1
Patterson	278,000	1	1
Payne	217,300	1	1
Peabody	238,000	1	2
Petworth	202,000	1	1
Phelps	579,900	1	1
Pierce	201,300	1	1
Polk	110,900	1	1
Potomac	145,700	1	1
Powell	85,900	1	1
Randall	240,300	1	1
Reservoir	120,900	1	1
Ross	210,800	1	1
Seaton	411,300	1	2
Simmons	390,400	1	1
Slater	355,300	1	1
Smallwood	99,000	1	1
Stevens	563,200	1	1
Sumner	177,300	1	1
Syphax	286,900	1	1
Takoma	141,200	1	1
Taylor	353,100	1	1
Tenley	151,800	1	1
Thomson	204,000	1	1
Threlkeld	52,000	1	1
Toner	391,000	1	1
Towers	200,200	1	1
Twining	362,700	1	1
Tyler	180,400	1	1
Van Buren	64,200	1	1
Van Ness	143,300	1	1
Wallach	260,800	1	1
Webb	85,300	1	1
Webster	152,000	1	1
Weightman	251,400	1	1
West	473,800	1	1
Western High	104,000	1	2
Wheatley	119,100	1	1
Wilson	64,000	1	1
School Annexes.			
822 8th St. NE	47,400	1	1
642 Massachusetts Ave. NE	4,300	1	1
607 O St. NW	10,500	1	1
624 O St. NW	16,800	1	1
626 O St. NW	16,700	1	1
625 Q St. NW	19,100	1	1
1120 20th St. NW	36,200	1	1
730 24th St. NW	4,300	1	1
1338 H St. NE	1,400	1	1
11th St. NE., between F and G	80,100	1	1
Total	29,699,300	138	146

Class of building.	Annual consumption.	Premises.	Meters.
FIRE ENGINE HOUSES, ETC.			
Engine houses:	*Cu. ft.*		
No. 1	51,900	1	1
No. 2	103,300	1	1
No. 4	31,800	1	1
No. 5	84,400	1	1
No. 6	134,200	1	1
No. 7	87,900	1	1
No. 8	94,700	1	1
No. 9	196,800	1	1
No. 10	98,000	1	1
No. 11	56,400	1	1
No. 12	59,200	1	1
No. 13	142,300	1	1
No. 14	305,100	1	1
No. 15	35,000	1	1
No. 16	44,200	1	1
No. 18	167,200	1	1
No. 20	45,700	1	1
No. 21 and No. 9 truck	59,100	1	1
No. 22	31,500	1	1
No. 23	87,100	1	1
No. 24	44,200	1	1
Truck houses:			
No. 1	91,800	1	1
No. 2	126,200	1	1
No. 3	124,000	1	1
No. 4	23,100	1	1
No. 5	37,100	1	1
No. 6	42,600	1	1
No. 7	152,800	1	1
No. 10	40,000	1	1
Chemical engine houses:			
No. 2	20,200	1	1
No. 3	21,900	1	1
No. 17	111,800	1	1
District of Columbia fire-fighter (boat)	149,100	1	1
District of Columbia fire department stable	7,600	1	1
Total	2,908,300	34	34
POLICE STATIONS.			
No. 1	400,500	1	1
No. 2	73,200	1	1
No. 3	161,800	1	1
No. 4	97,400	1	1
No. 5	82,400	1	1
No. 6	222,700	1	1
No. 7	576,800	1	1
No. 8	415,700	1	1
No. 9	98,700	1	1
No. 10	362,000	1	1
No. 11	23,100	1	1
Substation, Tenleytown, D C	12,500	1	1
Police boat wharf	32,400	1	1
House of detention	20,100	1	1
Total	2,579,300	14	14
PUBLIC PLAYGROUNDS.			
Columbia Heights	10,100	1	1
Georgetown	71,800	1	2
Rosedale	167,200	1	1
Total	249,100	3	4

TABLE 5.—*Meters installed in various buildings owned and controlled by the District government*—Continued.

Class of building.	Annual consumption.	Premises.	Meters.
PUBLIC CONVENIENCE STATIONS.			
	Cu. ft.		
7th and Pennsylvania Avenue NW	982,700	1	1
Pennsylvania Avenue, between 13th and 14th Streets NW	730,200	1	1
9th and K Streets NW	532,500	1	1
Total	2,245,400	3	3
STABLES.			
District of Columbia Engineer Department	457,600	1	2
Parking commission	47,300	1	1
Ambulance, Board of Charities	14,600	1	1
Street cleaning department	60,900	1	1
Total	580,400	4	5
WORKHOUSE GROUNDS.			
Superintendent's house	25,800	1	1
Wallingford house	40,600	1	1
Wards 1, 2, 5, 6, and 7	396,500	1	1
Receiving wards	424,000	1	1
Nurses' home	32,600	1	1
Pumping station and dead house	525,800	1	1
Greenhouse	3,600	1	1
Total	1,448,900	7	7
MISCELLANEOUS.			
	Cu. ft.		
Cement warehouse	5,300	1	1
Lodge house, Brightwood Reservoir	45,100	1	1
Market master's office	110,400	1	1
Morgue	25,700	1	1
Municipal lodging house	77,400	1	1
Naval battalion wharf	2,800	1	1
Public drinking fountain	13,600	1	1
Quarantine station	3,700	1	1
Zoological Park	4,667,700	1	1
Total	4,951,700	9	9
RECAPITULATION.			
Schools and annexes	29,699,300	138	146
Fire engine houses, etc.	2,908,300	34	34
Police stations	2,579,300	14	14
Public playgrounds	249,100	3	4
Public convenience stations	2,245,400	3	3
Stables	580,400	4	5
Workhouse grounds	1,448,900	7	7
Miscellaneous	4,951,700	9	9
Grand total	44,662,400	212	222

TABLE 6.—*Premises which receive an allowance of free water.*

	Number.	Consumption.	Allowance.	Exceeded.	Paid.	Meters.
		Cubic feet.	*Cubic feet.*			
Churches	81	3,230,300	5,436,725	11	$188.47	87
Orphan asylums	7	1,722,600	2,411,900	2	42.75	12
Hospitals	10	9,660,900	7,705,051	8	656.88	13
Homes	18	2,922,500	3,742,830	3	66.15	22
Schools	9	1,845,700	4,390,700	1	29.13	9
Neighborhood houses	4	120,100	1,008,000	.....	.....	4
Total	129	19,502,100	24,695,206	25	983.38	147

	Cubic feet.
Amount of water consumed	19,502,100
Amount of water used in excess of allowance	3,277,933
Total amount allowed free	16,224,167

TABLE 7.—*General information.*

Taps inserted in water mains:	
For new services	2,582
Water department, general	155
Total	2,737
New services	2,582
Services abandoned	1,638
Water services, total to date	66,159
Meters in service	23,912
Percentage of services metered	36

	In use June 30, 1911.	Installed 1912.	Abandoned 1912.	Total.
District meters in private residences	15,847	4,797	32	20,612
District meters in municipal buildings	165	62	.....	227
Private meters	2,791	170	31	2,930
Private meters in charitable institutions	139	7	3	143
Total in use June 30, 1912	.....	.....	.....	23,912

Average cost of installing a water meter by the department	$11.36
Average cost of repairs to meters	.31
Average cost of reading meters	.25
Average cost of computing meter accounts and making bills	.25
Average payment for premises in which meters were installed by the department	5.38
Average payment for premises in which private meters were installed	67.97

Premises which were vacated before payment could be enforced and premises on which an allowance was made for underground leaks.

	Houses.	Meters.	Amount of water actually consumed.	Amount of water paid for.	Difference.	Paid meter rate 1912.
Premises on which an allowance was made for underground leaks	37	35	1,403,900	851,200	552,700	$255.36
Vacated before payment could be made	20	20	359,150	179,100	180,050	53.73
No payment for fiscal year 1912, vacant	137	137	135,380	.....	.....	.....
Total	194	192	1,898,430	1,030,300	732,750	309.09

Revenues.

Revenue for metered water:	
District of Columbia meters	$83,326.44
Private meters	178,281.47
Total revenue for metered water	261,607.91
Total revenue for flat-rate accounts	279,024.57
Total revenue for meter and flat-rate accounts	540,632.48

REPORT OF SUPERINTENDENT OF SEWERS.

WASHINGTON, *August 21, 1912.*

SIR: I have the honor to submit the following report for the fiscal year ending June 30, 1912:

DIVISION A.—*Drainage studies, plans, and engineering data.*

Work on the future development of the sewerage system was continued during the year by advance studies and surveys in various suburban sections; while in a number of new sections that required immediate drainage, surveys and studies were made and the construction in whole or in part completed. In portions of the old system, work was continued on plans for improved drainage, where the existing works were obsolete and inadequate, and new sewers were built in more urgent cases so far as funds would permit.

In connection with the Anacostia River improvement and filling in of the river flats, detail studies were made for the extension of all existing trunk outlets to the

established bulkhead line, and construction was in progress on these sewers during the year. More than a hundred thousand dollars will be required to complete these works, but this will be borne by the annual appropriations of three years. It is planned to complete this construction well in advance of the actual dredging operations.

Studies were continued on the main interceptors of the sewage-disposal system along the upper Potomac, in Rock Creek Valley, and in the valley of the Anacostia River. Detail plans for several construction sections of the works already authorized by Congress were completed and in part placed under contract. Work on designs and plans for the Poplar Point Pumping Station, which will handle the drainage from the Anacostia main interceptor and deliver same to the outfall sewer, was continued during the year; details were worked out for the electric power cable installation, including the submarine cable under the Anacostia River, and these cables were successfully laid. This installation will furnish power for the automatic electric pumping service, controlled from the main sewerage pumping station on the opposite side of the river about three-quarters of a mile distant, and includes telephone and recording circuits, to provide a complete record and control at the main station. It includes all construction necessary to facilitate direct transportation of attendants on screens, etc., with a minimum loss of time between stations, and is designed to secure satisfactory and efficient operation with the minimum expenditure for attendance. This portion of the work has been completed in advance of the station construction so as to have the economical advantage of this equipment during the building and equipment of the station.

RAINFALL AND RUN-OFF.

In connection with run-off studies, the rainfall record was extended during the year by the addition of four new stations, making a total of 24 stations, covering practically the entire District. Observations were systematically obtained and recorded, and autograph records from the recording gauges secured. There were few storms of unusual intensity, two of which are recorded as follows:

Unusual storms, showing rates at different stations.

Time.	Station No. 1.	Station No. 2.	Station No. 3.	Maximum rate (inches per hour).		
				Station No. 1.	Station No. 2.	Station No. 3.
June 17, 1912:	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
2.40 p. m.	0.04	0.02	0.20	0.48	0.24	2.40
2.50 p. m.	.64	.35	.80	3.60	1.98	3.60
3 p. m.	.70	.45	.85	1.98	1.29	1.95
June 23, 1912:						
1 p. m.	.....	.....	.08	.....	.....	.96
1.10 p. m.	.....	.....	.60	.....	.....	3.12
1.20 p. m.	.....	.....	1.17	.....	.....	3.27
1.30 p. m.	.01	.02	1.38	.12	.24	2.60
1.40 p. m.	.30	.13	.....	1.74	.66	.....
1.50 p. m.	.45	.28	.....	1.32	.78	.....

NOTE.—No. 1, Weather Bureau; No. 2, sewerage pumping station; No. 3, boundary sewer gatehouse. Distance from Weather Bureau to boundary sewer gatehouse, 4 miles; distance from Weather Bureau to sewerage pumping station, 3¼ miles; distance from boundary sewer gatehouse to sewerage pumping station, 2 miles.

The rainfall of June 23, 1912, is important as illustrating the great variation in intense precipitations even within very small areas. An amount of rain for 10 ordinary days fell in 20 minutes at station 3, while in the same interval no rain fell at stations 1 and 2, and no such rate was elsewhere recorded in any period of the storm.

The precipitation by months for the fiscal year was recorded as follows:

1911.

	Inches.
July	4.47
August	7.27
September	2.03
October	4.07
November	3.85
December	3.34

1912.	Inches.
January	3.85
February	2.70
March	6.14
April	2.33
May	4.84
June	4.36
Total for the year	49.25

RIVER FLOW AND SEWAGE DILUTION.

The outfall at Grimes, on the Potomac River, was under constant observation throughout the year. While the condition of the waters in the vicinity of the outfall even under unfavorable influences of tides and minimum river flow, was excellent without exception, yet occasionally some oil could be observed, though in very small quantities.

This is not ordinary grease, which is very effectively removed at the pumping station, but both petroleum oil and coal-tar distillate, which has been traced to three principal sources: (1) The Standard Oil Co.'s plant; (2) the Washington Gas Co.'s Works, and (3) oiled roads, both suburban and park, from all of which oil is drained into the public sewers. Such discharge is both objectionable and unlawful. Every effort is made to prevent this as far as practicable, and it is a subject of constant and vigilant investigation.

Another source of objectionable drainage that affects conditions at the outfall is the United States Asylum for the Insane, which discharges the raw sewage of 6,000 people directly into the outfall, without sedimentation, screening, or skimming. Study is being made with a view of correcting this condition by the introduction of small treatment works in the asylum grounds.

An excellent test of the condition of the river in the vicinity of the sewage outfall is found in the perfectly clean river bottom. After five years of constant discharge of the sewage there is no evidence of sludge deposit, which indicates the effectiveness of the preparation of the sewage at the pumping station for discharge into the river, and also the abundant capacity of the river to efficiently dispose of the sewage by dilution.

The following is a tabulation of the flow of the Potomac River at this point for each month of the year, together with the average discharge through the outfall, its ratio to the river flow, and the effective dilution obtained.

River flow and sewage dilution.

Months.	River discharge (second-feet).			Average pumpage (second-feet).	Ratio to river flow.	Effective dilution.
	Maximum.	Minimum.	Mean.			
1911.						
July	5,010	1,260	2,690	98	1.27	64.1
August	24,750	1,260	2,797	99	1.28	66.1
September	116,800	4,400	15,530	102	1.152	370.1
October	41,600	4,980	10,640	108	1.98	253.1
November	16,300	3,660	7,458	110	1.68	178.1
December	33,400	4,210	12,627	108	1.123	300.1
1912.						
January	26,300	2,120	6,839	112	1.61	163.1
February	106,875	1,250	10,435	112	1.93	250.1
March	131,250	10,500	36,658	102	1.359	873.1
April	46,375	8,900	18,615	83	1.224	446.1
May	84,000	7,900	24,685	97	1.254	588.1
June	9,425	4,625	6,797	109	1.62	161.1

Oxygen determinations of the condition of the water within the dilution basin were regularly made throughout the year. The following table gives the maximum, minimum, and mean results of these tests for each month in comparison with similar results from river water taken a mile above the upper limits of the dilution basin. The river flow at the time of taking samples is also given.

Comparison of oxygen tests of samples of river water taken near sewage outfall, and from the upper Potomac River for the fiscal year 1912.

Month.	Average river flow.	Oxygen, per cent of saturation.					
		Maximum.		Minimum.		Mean.	
		Dilution basin.	Upper river.	Dilution basin.	Upper river.	Dilution basin.	Upper river.
	Sec.-feet.						
July	2,576	76	80	60	70	70	75
August	2,195	74	80	64	68	70	72
September	17,965	94	95	72	84	84	88
October	11,261	95	100	80	92	86	94
November	7,562	97	100	81	90	91	96
December	11,846	97	100	89	94	95	99
January	6,219	96	98	96	97	96	97
February	18,856	100	100	100	100	100	100
March	33,468	100	100	100	100	100	100
April	19,040	100	100	91	93	96	98
May	24,365	100	100	93	94	99	100
June	6,688	100	100	82	89	85	95

During the past 12 months the river flow has exceeded 2,000 second-feet each day, except for three periods aggregating 12 days. The minimum flow was 1,260 second-feet and the maximum 116,000 second-feet.

SEWAGE DISPOSAL AND THE SHELLFISH INDUSTRY.

Attention has been given to the subject of sewage disposal in the Potomac River with reference to its effect on the healthfulness of oysters taken from the beds of the lower Potomac, from 60 to 100 miles below Washington. While it is recognized that the river carries an appreciable load of organic pollution from communities above Washington, and receives considerable additions thereto from numerous communities below Washington and nearer the oyster beds, yet, as the largest user of the river for sewage disposal, it appears advisable to thoroughly investigate the subject. To this end all available data as to sewage discharge and the location of oyster beds have been mapped, and early in the year the subject of a thorough bacteriological survey of the river was taken up with the Public Health and Marine-Hospital Service, with the suggestion that this survey should be systematically carried on through at least one year, with weekly examinations or oftener, and that the District would undoubtedly afford all assistance possible in this work. This survey should be undertaken. It is considered especially important in view of the fact that the only data on the subject is from two isolated examinations of the river, one made in March and one in May, 1912, by the Department of Agriculture, upon which surprising conclusions were based. As these widely published conclusions, from this very incomplete data, are at variance with all credited opinion as to the resanitation of river waters, in so far as they indicate unabated pollution for great and practically indefinite distances from the source, a thorough and systematic investigation of the subject would be of great value. Should these conclusions be corroborated, it is suggested that a practical remedy may be found in local and specific disinfection of disease-bearing sewage rather than in any general treatment of all sewage, and if so confirmed, it becomes apparent that, to be effective, it would be necessary to apply disinfection to the excreta of all typhoid patients throughout the many thousand square miles of the Potomac Basin.

METROPOLITAN SEWERAGE SYSTEM.

Work was continued during the year on a study of the condition of streams flowing into the District as to pollution by the discharge of raw sewage therein from the neighboring towns and villages of Maryland. This includes the collection of field data, and its recording and mapping. The active cooperation of the Maryland State Board of Health has been secured on the work of conserving the sanitary condition of these streams, and this board is now engaged in making a survey and study of the Maryland area, with a view to submitting comprehensive plans for the sanitary drainage of this territory. In addition, the governor of Maryland has appointed a commission to work in conjunction with the State board, and it is anticipated that full reports will be submitted to the next session of the legislature in January, 1914.

But specific legislation such as would be required on behalf of the District, to put joint drainage plans into effect, can not be formulated in advance of the full development of these State plans, and this subject has therefore been deferred awaiting the action of the Maryland authorities. The volume of sewage discharge into these streams has been considerably augmented during the year, and some of the stream conditions are noticeably bad.

In the meantime the development of the District sewerage system has been so far advanced as to permit receiving the Maryland sanitary drainage at the District line in Rock Creek Valley within 12 months after legislation authorizing same becomes effective, and certainly as soon as the earliest possible development of the Maryland drainage could require. In the Anacostia Valley a considerably longer period, not less than five years, must elapse before the State drainage in this valley can be cared for.

Division B.—*Maps, records, and drafting.*

Detail drainage studies were made under No. 507, engineer department files, and 365 plats prepared for extensions of main and pipe sewers, for replacing defective sewers, and for catchment basins. The official set of sewer maps has been kept up to date on current constructions, and much missing data of old works secured from field surveys and recorded thereon.

The counter portfolios of sewer maps, used by the public, have been kept posted with current construction and worn sheets replaced and new sheets added. These maps have also been kept up to date by plotting thereon all new subdivisions made during the year. Until recently it has been the practice to maintain a set of these portfolios for the use of the permit clerk, but arrangements have been made whereby all such information is given only by the sewer division, thus eliminating much unnecessary work.

The 100-foot to 1-inch scale drainage study maps, for the suburban portions of the District, are kept posted to date with current construction, and new subdivisions. This set of working maps has been systematized and extended by the addition of 24 new maps, covering a large suburban area.

Two hundred and ninety slips, showing proposed assessment sewers, and 165 plats, showing the location of all constructed assessment sewers, were forwarded to the assessor during the year.

The card index of new subdivisions has been maintained, and 538 new subdivisions listed. By the aid of this index the standard tracings, drainage study maps, and topographic maps are kept up to date on street extensions, and when parcel property abutting service sewers is subdivided, the assessor is notified in order that assessment for sewer may be collected.

Ten old and worn sewer grade sheets were replaced and 342 new grade sheets were made of the work of the year.

The health officer is notified of the construction of new service sewers where the same abut existing houses; also of the existence of all dwellings having available sewer service but not connected with same.

In order to keep in touch with the development of the water distribution system, a chart showing all water mains ordered to be laid is kept posted, with a view to securing an harmonious development of the water and sewer systems.

All paving schedules of the surface division, covering 466 jobs during the year, are carefully considered and plans prepared, where necessary, for abandoning, reconstructing, or constructing sewers, and their appurtenances in advance of street work.

All highway plans for establishing new street grates are studied with regard to their effect on the development of the drainage, and modifications recommended where required.

Computations have been continued for new discharge curves for trunk sewers.

Plans, estimates, and specifications were prepared for sewer construction under 19 contracts.

Division C.—*Underground construction, public-service corporations.*

A careful supervision of all underground construction of the public-service corporations was carried on during the year by the sewer division. This includes, (1) study for location for all new work and extensions, particularly with a view to conservation of public space; (2) definite location for all new work; (3) inspection of all construction work in progress as to materials, methods, and quality of construction; (4) field locations of all construction in public space as completed; (5) mapping of all construction on standard maps and on detail record sheets; (6) a card system recording all constructions.

The work of this division for the fiscal year is summarized as follows:

Permits applied for and acted on		1,423
New record sheets made		1,039
Card records		1,423
New gas mains laid	miles	22.8
Electric duct laid	do	127.6

While this important work is kept up to date, much remains to be done toward securing a record of the construction in previous years when little was done in this direction. The limited number of regular employees that it is possible to assign to this division and the lack of any special funds renders progress on back work necessarily slow.

A marked improvement in the location and record work of the various public-service corporations is recently very apparent, and indicates a growing appreciation of the economical value of good records. The helpful cooperation of the officials of the several companies in securing and perfecting records of old work is acknowledged.

Division D.—*Maintenance, sewerage system.*

There are now 617.71 miles of sewers and 4,889 catchment basins maintained. This maintenance includes the repairing, cleaning, flushing, and inspection of these works. An accurate and detail daily record of all work performed, with a complete system of cost keeping by card system is maintained.

The following is a summary of the work of this division for the fiscal year:

Cleaning:		
Main sewers cleaned	feet	4,071
Pipe sewers cleaned	do	122,838
Pipe sewers flushed	do	5,906,405
Manholes flushed	number	16,733
Pumps, regulators, and gates, cleaned and inspected	do	2,245
Storm water receiving basins flushed	do	5,293
Basins cleaned	do	38,760
Basin outlets cleaned	do	63
Sludge removed:		
Pipe sewers	cubic feet	2,479
Storm water receiving basins	do	147,771
Sediment chamber, sewerage pumping station	do	53,140
Screens, sewerage pumping station	pounds	1,084,128
Inspection and repairs:		
Main sewers—		
Main sewers inspected	miles	126.24
House connections inspected and repaired	number	158
Special large connections	do	29
Pipe sewers—		
Pipe sewers inspected	miles	491.47
Pipe sewers relaid, including basin connections	feet	168
Settlements refilled	number	8
Manholes reconstructed	do	14
Manholes adjusted and repaired	do	44
Manholes abandoned	do	12
Manhole frames replaced	do	36
Manhole covers replaced	do	112
Basins—		
Reconstructed	do	5
Repaired	do	92
Abandoned	do	4
Alley grates replaced	do	23
Alley frames replaced	do	21
Costs:		
Cleaning and inspection—		
Inspecting main sewers		$979.97
Inspecting and flushing pipe sewers		2,736.10
Cleaning main sewers		346.46
Cleaning pipe sewers		3,722.93
Cleaning catch basins		15,974.67
Cleaning and inspecting pumps, gates and regulators		856.57

Costs—Continued.

Repairing—

Main sewers (see special sheet)	$3,255.94
Pipe sewers and basin connections	389.87
Reconnecting and abandoning pipe sewers	63.13
Filling settlements over sewers	36.91
Reconstructing basins	248.43
Repairing and adjusting basins	831.68
Abandoning basins	10.57
Replacing basin grates and frames	484.87
Reconstructing manholes	547.80
Adjusting and repairing manholes	518.33
Abandoning manholes	36.10
Replacing manhole frames and covers	412.86
Miscellaneous repairs	128.92

DIVISION E.—*Operation and maintenance, sewage-disposal system, yards and shops.*

Under this division is included the maintenance and operation of the main sewerage pumping station, also of substations, gates and regulators, and all mechanical equipment of the sewer division, the management of shops, stores, yards, and floating equipment, as well as the installation of mechanical apparatus, and all special construction.

Sewerage pumping service.—There were 24,900 gallons of sewage and 800,000 gallons of storm water pumped during the year. The pumping plant was operated without any interruption of service and received the sewage from practically the entire District, delivering same to the outfall. The fixed hydraulic levels were constantly maintained on all classes of pumps.

The following is a tabulation of the quantities for each month:

Table showing total pumpage for each month of fiscal year.

Month.	Sewage.	Storm water.
1911.	*Gallons.*	*Gallons.*
July	1,875,810,000	89,420,000
August	1,934,010,000	124,400,000
September	1,937,481,000	40,300,000
October	2,318,173,000	81,400,000
November	2,312,515,000	57,280,000
December	2,250,747,000	27,260,000
1912.		
January	2,426,586,000	16,810,000
February	2,228,568,000	54,706,000
March	2,019,951,000	122,540,000
April	1,569,903,000	46,630,000
May	1,966,734,000	96,870,000
June	2,083,698,000	87,208,000

Nine million three hundred and thirty-seven thousand nine hundred and twenty pounds of coal were consumed, and there were used 1,282 gallons of cylinder oil, 1,701 gallons of engine oil, 188 gallons of miscellaneous oils, and 855 pounds of engine grease; 1,630 gallons of illuminating oil and 8,070 gallons of gasoline were consumed, the two latter items including all usage of the sewer department during the year; 2,186 pounds of cotton waste were used and 2,023 pounds of waste were washed and reused.

The following are the principal items of betterment and repair for the year:

Pumping plant.—Among the minor improvements and repairs in connection with the pumping machinery were a 3-inch connection to the condenser main for supplying river water to feed the boilers; new piston rods for circular pump on a generator; repairs on high and intermediate crank bearings pin, class 1 pumping engine; new fuel plates in five boilers, and new valves in duplex drainage pump. Rocker arms on three 65,000,000 gallon pumping engines were repaired. In the engine room the installation of thirty 500-watt Tungsten lamps with Holophane reflectors was completed during the year, replacing 476 carbon lamps, and thirteen 250-watt Mazda lamps with metal reflectors replaced 52 carbon filament 32-candle power lamps in the boiler room.

Station repairs and betterments.—An incinerator plant was installed in the sewerage pumping station for the cremation of all combustible wastes, including material

removed by the sewage screens and skimming tank. This equipment consists of a water-jacketed metal incinerator and includes flue to the main stack, hydraulic elevator for delivering wastes to the incinerator hopper, tank cars for handling same, piping, etc. The cost of the installation, erected, was $2,959.17. The wrought-iron inclosure fence around the water front of the sewerage pumping station was completed, and a section of dock paved with asphalt block. A large fireproof record room for the systematic storage of the yearly records of the sewer department was prepared in the office section of the pumping station. In the carpenter shop a 24-inch Oliver planer was installed; the main ventilating fan was erected on the main floor level and a new engine installed on same; the auxiliary coal crusher, being no longer serviceable, was removed to give space for incinerator and fan. The electric recording level indicators on the various pumping services were completed; the lighting system was extended in the station yard and lamps placed at both the main gates.

Substation work.—Submarine twin power cables and recording and telephone cable were laid under the Anacostia River between the sewerage pumping station and the inlet chamber, also the land section of these cables was laid in half pipe conduit to the site of the Poplar Point substation. These cables aggregated more than 9,000 feet in length, and the work included switchboard connections, terminal boxes, etc. The cost of all material for this work, including cables, was $5,285.11, and the cost of labor on the installation, tests, etc., was $1,710.60. The paved travel way between the inlet chamber and Howard Avenue, 1,500 feet in length, was constructed in connection with this work, at a cost of $261.30 for material and $1,396.26 for labor. A landing stage in front of the inlet chamber, to give access to the works on the east side of the Anacostia River, was also constructed at a cost for labor of $250.91 and material $375.88.

Shops.—Forms were built for all special construction during the year, including outlet channel boundary sewer, Massachusetts Avenue Heights trunk sewer, and connections on the Rock Creek main interceptor. A portable gasoline derrick was constructed and a permanent guy derrick, including hoisting and swinging engine, erected at the water front, at a cost, exclusive of machinery, of $943.47. The cost of installing an automatic railway in connection with same was $802.55. The steam power plant, for the brick works at Occoquan, including steam piping, was prepared complete for erection. Ice plow was constructed for the tugboat *Virginia*. Two small boats for shore work were built, and the hull and engine of gasoline launch rebuilt. All repairs were made to pumping and other machinery, working wagons, motor trucks, trench pumps, and general equipment. Small tools were repaired as follows: 6,801 picks, 127 mattocks, 27 drills, 103 chisels, 13 basin scoops, 13 axes, 16 hatchets, 19 handsaws, 2 crosscut saws; and 4,750 new manhole irons were made for construction work.

Stores.—All tools and miscellaneous supplies purchased for the sewer department were received, inspected, and issued at storeroom and yards, accurate records of each article being kept on the card system by the storekeeper and quarterly reports made covering all unexpendable property. Unserviceable property was listed for condemnation and sale.

Yard.—Work on the water-front yard at the foot of First Street SE. was continued during the year. A working wharf was constructed at a cost of labor, $582.85, and materials, $1,041.55, and a shed for special concrete construction built at a cost of $581.23. The following special concrete work was made at the yard during the year: 2,901 linear feet of 24-inch semicircular pipe, 380 concrete cheek blocks, 166 concrete drip stones, 111 standard side basin tops, 70 standard corner basin tops, 32 special 3 foot 6 inch by 3 foot 6 inch basin tops, 48 special 3 foot 6 inch by 4 foot basin tops, 2 special 25-foot radius basin tops, and 176 concrete invert blocks.

Floating equipment.—During the year the floating equipment was employed in conveying materials removed from sediment chamber and ashes from the sewerage pumping station to points of disposal on the flats along the south side of the Anacostia River, in conveying construction materials to points along the water front where sewer work was in progress, in transportation of chemist in taking samples of Potomac River water for oxygen determination, dredging in front of sewer outlets and for sewer construction, transportation of inspectors, assistant engineers, etc.

Miscellaneous construction.—Among the miscellaneous construction jobs for the year were the following: Completing inlet chamber, outfall sewer, including cement lintel floor and windows at cost of $336.26; engine house for guy derrick, $401.07; concrete bulkhead east of engine foundation, $319.61; concrete bulkhead west of engine foundation, $320.03; paving east gate entrance to sewerage pumping station dock, $288.07; paving west gate entrance sewerage pumping station dock, $238.93; concrete bulkhead back of main wharf, $1,896.82; engine foundation, $266.06; extension of wharf for unloader, $588.97; moving storehouse to sewer department yard, $171.50; concrete bulkhead along water front, $579.67; and working platform east of main wharf, $400.03.

Miscellaneous work.—Considerable engineering and other work was done for the Occoquan workhouse establishment, including preliminary surveys, plans and field location for a sewerage system, layout for brick plant, plans for steam piping and stack for same, and refitting machinery for same; also plans and specifications for new equipment, surveys, inspections, and drawings were made for additional stone-crusher plant, materials to be shipped to Occoquan by water were received and handled at the sewer department dock.

All construction materials such as brick and stone coming from the Occoquan plant were unloaded from barges, yarded, and issued to the various District works. This involved considerable incidental work in the way of accounting, etc.

At the smallpox hospital and quarantine station, automatic sewage disinfecting plants were designed and constructed for the health department. This apparatus consists of a concrete collecting chamber to which the hospital sewer drains, and which is discharged by an automatic sewage siphon to the public sewer; also of an automatic dosing flask and a disinfectant reservoir. The collecting chamber is of capacity sufficient for a minimum discharge interval of six hours. The dosing flask is automatically filled from the disinfectant reservoir and is discharged by the discharge of the siphon chamber. A constant quantity of the disinfectant is applied to a fixed quantity of sewage, this proportion may be varied to suit any requirement. The disinfecting apparatus is entirely automatic, requiring no attention except to keep the reservoir supplied, and can be placed in any convenient location within the hospital in reasonable proximity to the siphon chamber. Having no floats or moving parts, mechanically the apparatus is simple and reliable. Constructed entirely of glass, with no metal surfaces, permits the use of any disinfectant without chemical injury to the apparatus.

Occoquan products.

The following Occoquan products were received at the sewer department yards during the fiscal year 1912:

	Cubic yards.
Broken stone	1,776.24
Salmon brick	91,400.00
Arch brick	62,100.00
Red brick	43,000.00

These construction materials were issued on orders, as follows:

Broken stone—	
Account main and pipe sewers, 1912	448.54
Account suburban sewers, 1912	88.00
Account assessment and permit sewers, 1912	390.00
	926.54
Salmon brick—	
Account main and pipe sewers, 1912	25,550
Account suburban sewers, 1912	2,200
Account assessment and permit sewers, 1912	20,250
	48,000
Arch brick—	
Account main and pipe sewers, 1912	2,100
Account stable and dog pound, health department	50,000
	52,100
Red brick—	
Account main and pipe sewers, 1912	8,100
Account suburban sewers, 1912	4,950
Account assessment and permit sewers, 1912	4,050
	17,100

The following material was on hand at the close of the fiscal year:

Broken stone	849.7
Salmon brick	43,400.0
Arch brick	10,000.0
Red brick	25,900.0

DIVISION F.—*Construction, sewerage system.*

County west of Rock Creek.—In the section of the District west of Rock Creek a new system of sewers was constructed in Massachusetts Avenue Heights, extensions in Potomac Heights to provide for the drainage of the Girls Reform School and the United States buildings at the Delacarlia Reservoir; in University Heights, Chevy Chase, and in Tenleytown for the drainage of many premises surrounding the Reno Reservoir that had box privies, also in Cleveland Park, Woodley, and in areas along the Potomac above Arizona Avenue. The construction in the various areas was as follows: In Chevy Chase, 6,201.90 linear feet of service sewers; in Tenleytown, 264.20 linear feet of service mains and 13,498.85 linear feet of service sewers, a total of 13,763.05 linear feet; in Cleveland Park, 2,026.50 linear feet of trunk sewers and 2,260.20 linear feet of service sewers, a total of 4,286.70 linear feet; in Potomac Heights, 1,554.50 linear feet of trunk sewers, 729.40 linear feet of service mains, and 8,499.10 linear feet of service sewers, a total of 10,783 linear feet; in Woodley Park, 25 linear feet of service sewers; in Massachusetts Avenue Heights, 5,435.80 linear feet of trunk sewers, 3,098.75 linear feet of service mains, and 15,585.09 linear feet of service sewers, a total of 24,119.62 linear feet. The aggregate length of sewers constructed in this section was 59,179.27 linear feet.

County east of Rock Creek.—In the county east of Rock Creek, the Piney Branch trunk-sewer outlet with automatic gate control and connection with the interceptors of the sewage disposal system was completed, the Petworth Valley trunk sewer was built to Georgia Avenue, and the deep service sewers in connection with the new Cedar Street Subway at Takoma Park was completed. The following is a summary of construction in this section: In Washington Heights, 6,776.89 linear feet of trunk sewers and 3,612.65 linear feet of service sewers, a total of 10,389.54 linear feet; in Petworth, 382.66 linear feet of trunk sewers and 3,036.54 linear feet of service sewers, a total of 3,419.20; in Takoma, 1,333.66 linear feet of service mains and 1,930.50 linear feet of service sewers, a total of 3,264.16 linear feet; in Brightwood, 2,845.42 linear feet of service sewers; in Mount Pleasant, 218.65 linear feet of service mains and 4,161.39 linear feet of service sewers, a total of 4,380.04 linear feet. The aggregate length of sewers constructed in this section was 24,298.36 linear feet.

County west of Anacostia River.—In the area between North Capitol Street and the Anacostia River, service sewers were constructed in various sections as follows: In Brookland, 986 linear feet of service mains and 13,328.83 linear feet of service sewers, a total of 14,314.35 linear feet; in Langdon, 1,485.05 linear feet of service sewers; Eckington, 783.50 linear feet of service mains and 3,787.60 linear feet of service sewers, a total of 4,571.10 linear feet. The aggregate length of sewers constructed in this section was 20,370.50 linear feet.

County east of Anacostia River.—East of the Anacostia River sewers were constructed as follows: In Anacostia, 178.60 linear feet of service mains and 2,401.80 linear feet of service sewers, a total of 2,580.40 linear feet; in Congress Heights, 3,900.80 linear feet of service sewers. The aggregate length of sewers constructed in this section was 6,481.20 linear feet.

Washington City.—In the northwest section a new trunk outlet sewer was built and the local system of old and defective sewers in the vicinity of Pennsylvania Avenue, between Third and Sixth Streets, were replaced by new sanitary sewers in advance of the resurfacing of this avenue. For the area adjacent to Potomac Park, between Eighteenth and Twenty-third Streets, a trunk sewer was constructed. In the northeast section, 437.73 linear feet of trunk sewers and 4,226.80 linear feet of service sewers were built, a total of 4,664.53 linear feet. In the southeast section, 477 linear feet of trunk sewers, 1,647 linear feet of service mains, and 4,687.40 linear feet of service sewers were built, a total of 6,811.40 linear feet. In the southwest section, 1,212.50 linear feet of service sewers were built. In the northwest section, 1,184.90 linear feet of trunk sewers, 1,258.40 linear feet of service mains, and 7,827.20 linear feet of service sewers were built, a total of 10,270.50. In Georgetown, 1,460.80 linear feet of service sewers were built. The aggregate length of sewers constructed in the city was 24,419.73 linear feet.

Storm-water receiving basins.—During the year 160 storm-water receiving basins were constructed, 5 reconstructed, 92 repaired, and 4 abandoned.

SEWAGE DISPOSAL SYSTEM.

East-side intercepting sewer.—The east side interceptor sewer was completed nearly to Bunker Hill Road and the Bunker Hill Road section was about one-third completed, a total of 3,266 linear feet.

Rock Creek main intercepting sewer.—The second section of the Rock Creek main intercepting sewer, extending to Connecticut Avenue, 4,136 feet in length was completed and the third section extending to Adams Mill Road was placed under contract.

Anacostia main intercepting sewer.—Twelve hundred and eighty-nine linear feet of the Anacostia main interceptor sewer between Poplar Point and the new Anacostia Bridge were completed during the year. The electric power cables for the substation were laid and the loading and travel way to afford access to the station completed.

Length of main sewers and pipe sewers and number of storm-water basins constructed during the fiscal year ending June 30, 1912.

Appropriation.	Main sewers.	Pipe sewers.	Storm-water basins.
	Linear feet.	*Linear feet.*	
Assessment and permit work	443.70	79,125.70	.....
Miscellaneous trust funds deposits	2,787.90	23,207.61	23
Main and pipe sewers	1,808.01	8,616.80	116
Suburban sewers	6,904.96	12,871.87	2
Sewage-disposal system	8,691.05	15.00	.....
Miscellaneous appropriations	44.44	2,842.50	19
Total	20,685.06	126,679.48	160

RECAPITULATION.

Total length of sewers on June 30, 1912:		
Main sewers	miles	126.01
Pipe sewers	do	492.52
Total	do	618.53
Cost of sewerage system June 30, 1912		$11,539,374.28
Cost of sewage disposal system June 30, 1912		4,228,555.94
Total		15,767,930.22

Division G.—*Records and Accounts.*

The work of this division consists in the preparation of requisitions and vouchers, records of cost of construction and cost keeping, and preparing pay rolls, and embraced during the year 1,116 construction jobs, 8,153 foremen's reports, 4,546 card records, 1,240 bills, 527 pay rolls, 1,543 requisitions, 268 transfer and refund vocuhers, 494 tool orders, 481 engineer department files, 286 letters, 535 completion reports, 97 statements of accounts, and 1,748 reports.

The following is a summary statement of account of the various sewer appropriations for the fiscal year 1912, viz:

Sewerage system.

Cleaning and repairing sewers and basins:		
Appropriation	$65,000.00	
Repayments account of deposits	404.92	
		$65,404.92
Expended—		
Mechanics, laborers, and watchmen	33,543.62	
Drivers and gate tenders	10,568.84	
Inspectors and other per diem employees	557.50	
Construction material and tools	5,830.16	
Repairs to equipment; equipment and supplies	8,853.79	
Paid surface division for repaving work	531.52	
Paid engineer department stables for forage, blacksmith work, etc	5,446.25	
		65,331.68
Unexpended balance		73.24

Main and pipe sewers and receiving basins:		
Appropriation	$65,000.00	
Repayments on account of contingent charges	478.76	
		$65,478.76
Expended—		
Contract construction	6,232.82	
Day labor construction	25,056.05	
Inspectors and other per diem employees	2,901.45	
Construction material and tools	19,288.50	
Paid surface division for repaving	3,034.38	
Paid engineer department stables for forage, blacksmith shop, etc	241.43	
Paid property clerk's office for salaries, etc	793.93	
Paid chief clerk's office for salaries	100.00	
Outstanding contracts and material to complete same	5,810.00	
		63,458.56
Unexpended balance		2,020.20
Suburban sewers:		
Appropriation		130,000.00
Expended—		
Contract construction	47,199.46	
Day labor construction	23,615.11	
Inspectors and other per diem employees	4,327.69	
Construction material and tools	18,701.91	
Paid surface division for repaving work	1,582.68	
Paid engineer department stables for forage, blacksmith shop, etc	225.00	
Paid property clerk's office for salaries, etc	1,436.76	
Paid chief clerk's office for salaries	140.00	
Outstanding contracts and material to complete same	32,700.00	
		129,928.61
Unexpended balance		71.39
Assessment and permit work, sewers:		
Allotment for sewers, 1912		125,000.00
Expended—		
Contract construction	15,716.95	
Day-labor construction	63,303.52	
Construction material and tools	28,169.75	
Paid surface division for repaving work	4,045.55	
Paid engineer-department stables for forage, blacksmith work, etc	225.00	
Inspectors and other per diem employees	4,459.87	
Paid property clerk's office for salaries	1,460.52	
Paid chief clerk's office for salaries	152.00	
Outstanding contracts and material to complete same	2,522.97	
		120,056.13
Unexpended balance		4,943.87

Sewage-disposal system.

Maintenance and operation, sewage-pumping station:		
Appropriation		$44,500.00
Expended—		
Mechanics, laborers, and watchmen	$18,307.26	
Inspectors and other per diem employees	888.00	
Coal, oil, waste, and other supplies	23,132.15	
Tools and equipment renewals	2,129.58	
		44,456.99
Unexpended balance		43.01

East side interceptor, boundary to Brookland:		
Unexpended balance from fiscal year 1911	$88.78	
Appropriation for fiscal year 1912	49,000.00	
		$49,088.78
Expended—		
Contract construction and material	28,814.52	
Inspectors and other per diem employees	1,572.75	
Outstanding contracts and material to complete same	18,596.61	
		48,983.88
Unexpended balance		104.90
Rock Creek main interceptor:		
Balance from 1911 appropriation	21,894.37	
Appropriation for 1912	40,000.00	
		61,894.37
Expended—		
Contract construction	32,411.80	
Day-labor construction	438.84	
Inspectors and other per diem employees	1,101.75	
Construction material and tools	6,522.92	
Paid property clerk's office for salaries	374.85	
Outstanding contracts and material to complete same	21,000.00	
		61,850.16
Unexpended balance		44.21
Anacostia main interceptor:		
Unexpended balance from fiscal year 1911	44,506.99	
Appropriation for fiscal year 1912	20,000.00	
		64,506.99
Expended—		
Contract construction	10,468.00	
Day-labor construction	2,875.26	
Construction material and tools	1,811.14	
Inspectors and other per diem employees	133.00	
Paid property clerk's office for salaries, etc	115.63	
Outstanding contracts and material to complete same	49,073.94	
		64,476.97
Unexpended balance		30.02
Sewage-pumping station:		
Balance of appropriation from 1911	5,808.95	
Expended—		
Day-labor construction and equipment	552.37	
Transferred to unused balances	5,256.58	
Unused balances:		
Balance on hand July 1, 1911	5,692.42	
Transfer from appropriation for sewage-pumping station	5,256.58	
		10,949.00
Expended—		
Day-labor construction	5,167.15	
Inspectors and other per diem employees	7.50	
Construction material and tools	1,744.32	
		6,918.97
Available balance		4,030.03

Purchase and condemnation of land for rights of way for sewers.

Appropriation	$1,000.00
Expended:	
Recorder's fees, witness fees, searching titles, etc	698.85
Unexpended balance	301.15

Total expenditure of sewer division funds, fiscal year 1912.

Sewerage system:		
Cleaning and repairing, 1912	$65,331.68	
Maintenance and operation, 1912	44,456.99	
Main and pipe, 1911	13,208.88	
Main and pipe, 1912	57,648.56	
Suburban, 1911	15,544.12	
Suburban, 1912	97,228.61	
Assessment and permit, 1911	39,374.83	
Assessment and permit, 1912	117,533.16	
Miscellaneous trust-fund deposits	31,966.96	
Permit work	3,240.04	
Miscellaneous appropriations	12,813.17	
Condemnation	698.85	
		$498,745.85
Sewage disposal system:		
Pumping station	552.37	
East side intercepter	30,387.27	
Rock Creek main interceptor	40,850.16	
Anacostia main interceptor	15,403.03	
Unused balances	6,918.97	
		94,111.80
		592,857.65
Outstanding contracts:		
Main and pipe, 1912	5,810.00	
Suburban, 1911	5,500.00	
Suburban, 1912	32,700.00	
Assessment and permit, 1912	2,522.97	
East side interceptor	18,596.61	
Rock Creek main interceptor	21,000.00	
Anacostia main interceptor	49,073.94	
		135,203.52
Total		728,061.17

MAINTENANCE OF THE SEWERAGE SYSTEM.

The maintenance work for the year included the regular thorough inspection of all trunk and pipe sewers, with detail reports of (1) sanitary condition, (2) repairs required, (3) minor betterments, and (4) general physical condition.

In advance of the repaving of Pennsylvania Avenue, between Third and Sixth Streets NW., the entire old and defective system was practically replaced by modern sanitary sewers. Work was continued on abandoning old duplicate service sewers, which it was the practice for many years to leave partly in service after paralleling same with new lines. These old sewers are often grossly insanitary and require considerable expenditure for maintenance without serving any useful purpose, and are being eliminated as rapidly as funds will permit.

Among the large items of trunk sewer repairs, were the rebuilding of arch and head wall at the Ninth Street SE. trunk outlet; constructing new concrete invert in the Virginia Avenue trunk sewer from Seventeenth Street westward; eliminating an elongated cesspool caused by defective grades; replacing old brick arch of the Ninth Street NW. trunk sewer in the vicinity of G Street, with new concrete arch, and abandoning old catchment basin in the bottom of the First Street trunk sewer at Florida Avenue NW., thus improving the sanitary condition of this sewer, and eliminating an annual expense for maintenance.

The basin-cleaning work was reorganized and provided with new and better street equipment, also with yard and wharf facilities for the removal of these wastes by river from the city, so as to abandon the practice of dumping this material within the city limits. The special flushing of storm-water receiving basins was extended during the year to all sections of the city and supplemented during the mosquito-breeding season by a dosing with mosquito oil.

The quantity of street dirt removed from storm-water receiving basins during the year increased in the average for each basin cleaned from 0.094 cubic yards in 1911 to 0.141 cubic yards in 1912, and the cost of cleaning increased from 28 cents for each basin cleaned in 1911 to 37 cents in 1912.

This increase may be ascribed to three principal causes: (1) The increase in rainfall from 33.22 inches in 1911 to 49.25 inches in 1912, washing a greater quantity of dirt

into the basins; (2) the exceptionally severe winter of 1911–12, which suspended street cleaning on account of snow for a long period, with the consequent accumulation of dirt on the streets, that in the subsequent thaws was discharged into the basins; and (3) the improved methods of street cleaning, using squegee and washing machines in large city areas, which washes much of the street dirt into the basins and sewers.

There were four cases of minor stoppages of small pipe sewers during the year, two of which were due to the dumping of ashes into the drainage system by householders, one to intrusion of tree roots, and one at the Union Railroad Station Plaza to the driving of a foundation pile on street railway construction directly through the sewer, which was 36 feet below the new street grade and under the heavy fill at that point. The District was reimbursed for the work on the latter by the street railway companies. In Eighteenth Street NW., between Kalorama and Columbia Roads, it was necessary to construct a relief sewer to remedy inadequate drainage in this street.

The following tabulation shows that the total length of sewers has increased to 618 miles, and that it has doubled in 20 years without an appreciable increase in the maintenance appropriation.

Year.	Length of sewers.	Appropriation for maintenance.	Cost of maintenance per mile.	Year.	Length of sewers.	Appropriation for maintenance.	Cost of maintenance per mile.
	Miles.				*Miles.*		
1893	310.44	$45,000	$144.96	1903	448.09	$58,000	$129.44
1894	325.07	45,000	138.43	1904	456.87	58,000	126.95
1895	338.30	45,000	133.02	1905	468.86	58,000	123.70
1896	351.55	45,000	128.00	1906	484.40	42,000	86.70
1897	369.04	50,000	135.49	1907	501.44	[1] 38,000	75.78
1898	382.78	50,000	130.62	1908	521.18	[1] 44,500	85.38
1899	394.92	50,000	126.61	1909	542.03	[1] 45,000	83.02
1900	408.09	50,000	122.52	1910	567.98	[1] 48,500	85.39
1901	421.34	50,000	118.67	1911	589.74	[1] 50,000	84.70
1902	436.89	50,000	132.76	1912	618.53	[1] 50,000	80.84

[1] Exclusive of sewage-disposal maintenance.

TRANSPORTATION.

Transportation for engineering and inspection was about evenly divided during the year between motor-driven and horse-drawn vehicles, two motor vehicles easily covering far more than the field covered by four horse-drawn vehicles. As this was the second year of operation of the motor-drawn vehicles, a better opportunity was given to obtain a practical comparison of values, summarized in the following tabulation:

Comparative cost of motor-driven and horse-drawn field party vehicles for fiscal year 1912.

Vehicles.	Total traveled mileage.	Actual cost of maintenance.	Actual cost of repairs.	Lost in travel time.	Total cost of vehicles.	Average cost per vehicle.	Cost per mile of travel per vehicle.
4 horse-drawn	9,000	$1,800.00	$40.00	$2,615.00	$4,455.00	$1,113.75	$0.205
2 motor-driven	20,000	708.23	127.00	1,232.50	2,067.90	1,033.85	.042

The costs given are the actual costs for the year, and do not represent averages of a number of years; for both types of vehicles the average costs for renewals and repairs would exceed those given. The experience of the year further verifies the correctness of data previously given, and indicates—

(1) Considering the expense involved in loss of time in travel, the horse-drawn vehicle actually costs more for maintenance than the motor-driven vehicle.

(2) Excluding this factor the year's data indicates that the cost per mile of travel of the horse-drawn vehicle is about five times that of the motor-driven vehicle. Consideration must be given, however, to the increasing expense each year of renewals and repairs on motor vehicles, also to ratio of depreciation which varies directly as to the original cost and inversely as the life of the respective types of vehicles.

Very respectfully, your obedient servant,

ASA E. PHILLIPS,
Superintendent of Sewers.

Maj. E. M. MARKHAM,
Corps of Engineers, United States Army,
Assistant to Engineer Commissioner, District of Columbia.

TABLE No. 1.—*Contract work,*

Contract No.	Locations.	Pipe sewers.		Main sewers.	
		Length.	Size.	Length.	Size.
		Feet.	*Inches.*	*Feet.*	
4773	Vicinity of Potomac Heights Subdivision.	1,447.8 9.0	10 21		
4811	1st St. SE., Anacostia River to O St.			60.5	3 feet
4820	1st St. SE., between P and N Sts.	1,186.0	12		
4858	15th St., Pennsylvania Ave. to G St. NW.	426.46	15		
4859	H St. NW., 14th to 15th Sts.	338.80	12		
4870A	18th, Newton and Monroe Sts. NE.	1,288.85	15		
4870B	Monroe St. NE., between 18th and 14th Sts.	444.70 1,480.10	15 10		
4870C	Between 17th and Monroe, 14th and Lawrence Sts. NE.	799.50 628.50	15 10		
4870D	Between 16th and Lawrence, 14th and Franklin Sts. NE.	360.80 989.20 977.00	15 12 10		
4873	Valley of Rock Creek, north of Military Road.	(3)			
4874	19th St. NE. between C and D Sts.			433.90	4 feet 6 inches
4875A	Belt Road, Fessenden, Hancock Sts.	719.70 2,565.90	12 8		
4875B	Howard St., Elliot Place, Square 1864.	3,952.60	8		
4875C	Fessenden and Howard Sts., Chappel Road.	549.00 530.80 1,319.90	15 12 8		
4876	Macomb St., between Connecticut Ave. and 34th St.	137.00	10	2,026.50	3 feet 6 inches
4877	B St. NW., between 21st St. and Potomac River.	6.00 3.00 3.00	12 15 18	1,055.25 212.55	2 by 3 feet 2 by 2 feet 6 inches
4878	B St. NW., between 19th and 21st Sts.	371.30	24	448.70	2 by 2 feet 6 inches
4995	Massachusetts Avenue Heights, trunk sewers.			750.40 1,045.40 1,320.60 2,179.40	5 by 5 feet. 4 feet 3 inches 3 feet 9 inches 2 feet 6 inches
5058	Massachusetts Avenue Heights, service sewers, 30th St.	150.00 505.50 554.00 429.80 828.40	24 21 18 15 10		
5059	Sewers in Conduit Road	1,234.10	18		
5060	Massachusetts Avenue Heights, service sewers, 32d St.	200.00 356.60 983.00 599.50 733.10	10 24 21 15 12		
5061	Petworth Valley outlet sewer			943.00 719.00	6 feet 4 feet 6 inches
5069	Bunker Hill Road NE., Sargent Road to Otis St.	2,850.00	15		
5083	Anacostia River, Stickfoot Branch outlet to bulkhead line.	(7)			
5084	Anacostia River, Chicago St. to bulkhead line.	(7)			
5085	Chicago St., outlet trunk sewer	(8)			
5110A	Dalecarlia sewers	318.50 2,466.50	21 18		
5110B	16th St. NW. between Arkansas Ave. and Webster St.	[12] 409.50 [12] 232.00	21 18		
5110C	14th St. SW. between C and D Sts.	(3)			
5110D	3d St. and Pennsylvania Ave.	247.30	24	373.65 106.06	2 feet 6 inches by 3 feet 9 inches. 2 by 3 feet
5110E	Laurel, 2d, and Whittier Sts., Takoma.	1,261.00	10		
5110F	Hamlin, 20th, Fulton Sts. and Rhode Island Ave. NE.	796.00 173.00	12 10		
5110G	Newton St. NE. between 14th and 17th Sts.	(3)			
5110H	Church St. NW. between 16th and 17th Sts.	(3)			
	Total	35,862.71		11,674.91	

[1] Includes $126.19 for work done under day labor job 1015.
[2] Includes $14.50 for work done under day labor job 616.
[3] No work performed.
[4] Paving work done under day labor job 592.
[5] Paving work done under day labor job 247.
[6] Repaving costs not yet reported.
[7] No sewer—piling and timber platform only.
[8] $5,458.50 paid by J. H. De Sibour.

fiscal year ending June 30, 1912.

Allowance to contractor.	Materials.		Costs.		Total cost.	Appropriation.	Contractor.
	Charged.	Not charged.	Inspection.	Pavement repairs.			
$7,133.79	$979.28	$927.68	$174.52	.....	9,215.27	Assessment and permit, 1911.	W. F. Brenizer Co.
2,583.96	695.54	19.70	47.87	.....	3,347.07	Main and pipe, 1911..	Geo. Hyman.
3,122.42	159.20	276.98	196.79	.....	3,755.39	.....do.....	W. F. Brenizer Co.
5,[illegible]05.18	121.14	189.08	157.50	[1] 806.49	[2] 6,679.39	Assessment and permit, 1911.	Do.
2,033.11	76.98	113.37	134.42	[3] 317.28	[4] 2,675.16	.....do.....	Geo. Hyman.
1,255.80	240.38	404.56	108.00	.....	2,008.74	Suburban sewers, 1911.	Jas. A. Coyle.
1,807.59	98.38	410.00	102.00	183.90	2,596.87	Assessment and permit, 1911.	Do.
1,444.40	178.86	373.91	88.00	.....	2,085.17	.....do.....	Do.
2,423.21	277.83	525.77	238.00	.....	3,464.86	.....do.....	Do.
.....	.....	.....	.....	.....	.....	.....	
2,405.60	811.50	19.42	72.00	.....	3,308.52	Suburban sewers, 1911.	W.F.Brenizer Co.
3,310.91	302.45	516.23	94.42	154.50	4,378.51	Assessment and permit, 1911.	Do.
3,952.29	346.83	541.31	98.27	73.50	5,012.20	.....do.....	Do.
2,618.23	259.04	483.05	38.32	9.45	3,408.09	.....do.....	Do.
7,434.13	2,309.49	59.39	311.17	221.68	[10] 10,226.86	Suburban sewers, 1911.	Do.
5,001.95	890.11	76.81	137.55	[6] 68.51	6,174.93	Main and pipe, 1911..	Do.
2,159.95	383.70	268.26	64.60	.....	2,766.91	Assessment and permit, 1912.	Do.
21,882.25	6,571.11	348.23	738.00	.....	[11] 29,439.59	Suburban sewers, 1912.	Do.
4,292.42	380.87	937.75	193.00	.....	[12] 5,804.04	Assessment and permit, 1912.	E. G. Gummel.
3,090.40	234.31	588.81	184.67	[5] 23.75	4,121.94	.....do.....	Richard J. Malone.
5,621.90	480.82	1,249.69	150.66	.....	[13] 6,903.07	.....do.....	W.F.Brenizer Co.
13,555.20	3,745.80	.....	528.00	(7)	17,829.00	Suburban sewers, 1912.	E. G. Gummel.
1,956.00	216.00	.....	99.00	(7)	2,271.00	.....do.....	Geo. Hyman.
2,660.00	.....	.....	210.89	.....	2,870.89	.....do.....	Clark & Winston Co. (Inc.)
3,733.50	.....	.....	181.42	.....	3,914.92	.....do.....	Do.
.....	.....	.....	.....	.....	.....	.....	
4,369.93	465.52	1,210.82	135.00	.....	6,181.27	Assessment and permit, 1912.	W. F. Brenizer Co.
.....	.....	.....	40.00	.....	40.00	.....do.....	Do.
.....	.....	.....	.....	.....	.....	.....	
2,978.73	469.23	220.49	103.50	.....	3,771.95	Main and pipe, 1912..	Do.
2,112.14	140.73	240.41	56.60	.....	2,549.28	Assessment and permit, 1912.	Do.
.....	.....	.....	52.00	(7)	52.00	.....do.....	Do.
.....	.....	.....	.....	.....	.....	.....do.....	Do.
.....	.....	.....	.....	.....	.....	Main and pipe, 1912..	Do.
119,735.99	20,730.15	9,892.72	4,634.97	1,859.06	156,852.89	.....	

[9] $2,499.05 paid by Harding & Upman.
[10] $14,594.22 paid by Massachusetts Avenue Heights Syndicate.
[11] $4,964.28 paid by Massachusetts Avenue Heights Syndicate.
[12] $5,095.09 paid by Massachusetts Avenue Heights Syndicate.
[13] One-half cost of outlet to be paid by D. S. Howell.

TABLE No. 2.—*Statement of sewers laid under the appropriation for assessment and permit work (permit system), fiscal year ended June 30, 1912.*

Order No.	Location.	Length.	Size.	Amount of deposit.	Cost. To District of Columbia.	Cost. To depositor.	Total cost.	Amount returned.	For whom done.
		Feet.	*Inches.*						
1	Fourteenth Street north of W Street	41	12	$80.00	$31.12	$31.13	$62.25	$48.87	A. Stewart.
2	K Street NW. between Thirty-first and Thirty-second Streets	258.5	12	270.00	224.55	224.55	449.10	45.45	Cap. Traction Co.
3	Alley of square 236	87.7	10	100.00	80.10	80.10	160.20	19.90	Frank Walter.
4	K Street and West Virginia Avenue NE	162.8	12	150.00	142.28	142.29	284.57	7.71	Isadore Freund.
5	Fourteenth Street north of W Street NW	40	12	75.00	62.69	62.69	125.38	12.31	H. Shaffert Sons.
6	Forty-second Street and Nebraska Avenue NW	535.3	10	420.00	403.00	403.00	806.00	17.00	S. H. Bond.
7	Alley of square 2150	38.3	8	35.00	21.45	21.46	42.91	13.54	Geo. A. Fuller Co.
8	A Street NE west of Seventeenth Street	183	10	150.00	116.00	116.01	232.01	33.99	A. B Townsend.
9	Upshur Street between Seventh and Eighth streets NW	244 185.3 152.5	12 10 15	660.00	379.71	379.72	759.43	280.28	H. Wardman.
10	Ingomar Street crossing Thirty-ninth Street NW	250	10	200.00	153.88	153.88	307.76	46.12	T. J. Fisher Co.
11	Seventeenth Street between Pennsylvania Avnue and H Street NW.	137.2	12	150.00 9.15	159.15	159.15	318.30	.....	Marsh & Peter.
13	Princeton Place, New Hampshire Avenue, and Georgia Avenue	170	10	125.00	82.10	82.10	164.20	42.90	E. M. Dulin.
14	Galena Place, Sherrier Place, and Conduit Road	171	12	115.00	105.15	105.15	210.30	9.85	Potomac Heights Land Co.
15	Alley of square 1187 (Beatty Alley)	140	8	87.50	65.32	65.32	130.64	22.18	District of Columbia Paper Manufacturing Co.
17	Seventh Street between S and T Streets NW	105	12	135.00	112.74	112.75	225.49	22.25	H. Blumenthal.
18	Bladensburg Road north of Queens Chapel Road	468.5	10	375.00	365.96	365.96	731.91	9.05	N. Auth.
19	Twenty-fourth Street NE. between Irving and Hamlin Streets	71	8	50.00	36.58	36.58	73.16	13.42	C. C. Murray.
20	Fifteenth Street between F and G Streets NW[1]	46.4	18	260.00	238.17	238.17	476.34	21.83	J. H. De Sibour.
21	H Street NE between Fourth and Fifth Streets	90	12	105.00	73.76	73.76	147.52	31.24	J. Wenig.
22	Eighth Street SW. between F and G Streets	55	8	35.00	27.09	27.09	54.18	7.91	Mrs. E. A. Olive.
23	Thirty-second Street and Klingle Road	540	10	475.00	359.19	359.19	718.38	115.81	D. J. Howell.
	Total	4,172.5	.....	4,061.65	3,239.99	3,240.04	6,480.03	821.61	

[1] This work done in connection with contract 4858. In addition the applicant paid $159.69 for bracing done under day labor job 1076.

TABLE No. 3.—*Statement of sewers laid under the appropriation for assessment and permit work (assessment system), for the fiscal year ended June 30, 1912.*

Order No.	Location.	Length.	Size.	Cost of— Material.	Labor.	Repaving.	Total cost.
		Feet.	*Inches.*				
100	K St. SE., between 14th and 15th Sts.	314.3	12	$91.41	$311.21	.....	$402.62
101	Kenyon St., Adams Mill Road and 19th St.	(1)	(1)	23.88	101.62	.....	125.50
102	19th St., Kenyon, and Lamont Sts	(1)	(1)	27.12	156.07	$40.83	224.02
103	Adams Mill Road, Irving, and Kenyon.	377.5	12	142.89	298.50	6.78	448.17
104	W Place between Hall Place and Observatory Circle	535	10	187.47	478.80	.....	666.27
105	Square 3535 in alley	413.5	10	133.08	644.35	.....	777.43
106	Harrison St. NW., 41st, and 42d Sts.	327	12	102.41	281.01	.....	383.42
107	12th St. between Evarts and Rhode Island Avenue NE	330	12	129.58	500.68	.....	630.26
108	Lamont St. and Georgia Ave NW	127 63	10 12	92.77	264.93	14.87	362.57
109	Galena between Sherrier and Carolina, and Potomac, between Galena and Jewett	209.4 408	12 10	210.94	632.26	.....	843.20
110	Allison, between 14th and 15th Sts. NW	278.6	12	91.05	284.98	.....	376.03
111	New Hampshire Ave. between Shepherd and Randolph, NW	65 190.8	12 10	102.02	249.70	.....	351.72
112	Jefferson St. and Georgia Ave. NW	63.5 319	12 10	144.48	431.71	5.24	581.43
113	47th St. NW., north of Fessenden St	65	10	18.07	79.07	.....	97.14
114	Lincoln Road and Rhode Island Ave. NE	705	12	278.11	867.87	32.49	1,178.47
115	13 St. SE., between K and L Sts	20 281	15 10	133.42	427.44	.....	560.86
116	Legation St., between 39th and 41st Sts.	517.2	12	185.43	668.09	.....	853.52
117	41st St., between Keokuk and Legation Sts	293.4	10	74.54	303.55	.....	378.09
118	M St. NE., between Florida Ave. and 6th St	85	10	24.68	81.50	4.37	110.55
119	T St. NE., between 2d St. and Lincoln Road	740	12	127.66	452.41	25.99	606.06
120	T St. NE., between 2d St. and Lincoln Road	20	12	130.68	457.14	.....	587.82
121	14½ St., between C and D Sts	310	12	119.87	288.28	.....	408.15
122	New Hampshire Ave., between Princeton and Brightwood Aves	151	12	69.51	167.60	.....	237.11
123	Otis St., at New Hampshire and Georgia Aves	75	10	50.31	130.94	.....	181.25
124	Buchanan St. east of Georgia Ave. NW.	165	12	51.42	109.45	.....	160.87
125	Georgia Ave., between Gallatin and Farragut	93	12	71.84	153.56	.....	225.40
126	Thirty-third St., between O and P Sts.	40.5	12	15.38	58.98	5.11	79.47
127	Kennedy St., between 7th and 8th Sts.	293	10	76.49	384.08	.....	460.57
128	Eleventh St., between Harvard and Columbia Road	300	10	88.26	292.84	.....	381.10
129	Calvert St., between Woodley Place and Connecticut Ave	25	10	7.89	17.75	.....	25.64
130	Sheridan Circle NW	31	12	9.53	42.25	10.24	62.02
131	Newton Place, between Park Place and Warder St	200	10	67.96	133.81	.....	201.77
132	Newton Place, between Georgia Ave. and Warder St	170 208.5	10 12	158.92	416.61	26.13	601.66
133	Seventeenth St., between Monroe and Newton Sts	253	10	83.71	308.89	.....	392.60
134	Newton St., between 17th and 18th Sts. NE	444.7	10	135.51	373.44	27.42	536.37
135	Ingraham and 8th Sts	570	8	146.23	739.37	.....	885.60
136	E St. NE., between 17th and 18th Sts	244	12	92.61	233.27	.....	325.88
137	C St. NE., between 10th and 11th Sts.	36.5	12	12.80	46.25	8.28	67.33
138	Square 870 in alley	20	8	15.11	31.62	13.80	60.53
139	Warren St., between 40th St. and Nebraska Ave	364.6	12	134.36	402.53	.....	536.89
140	Second St. SE., between K and L Sts	143.6	10	55.57	186.38	.....	241.95
141	Kearney St. between 13th and 14th Sts. NE	660.3 50	10 12	210.76	1,086.04	.....	1,296.80
142	Florida Ave., between 2d and R Sts	100	10	29.90	101.67	11.20	142.77
143	do	25	10	26.11	59.60	3.36	89.07
144	Fourteenth St., between Farragut and Gallatin Sts	66.5 122.5	12 10	97.71	271.19	7.60	376.50
145	Square 3079 in alley	68.5	10	33.12	92.87	.....	125.99
146	Kilbourne St., between 18th and 19th Sts	436	12	174.63	693.55	16.01	884.19

[1] Reported in 1911.

TABLE No. 3.—*Statement of sewers laid under the appropriation for assessment and permit work (assessment system), for the fiscal year ended June 30, 1912*—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
		Feet.	*Inches.*				
147	New Hampshire Ave., between Taylor and Upshur Sts	240	10	$81.76	$305.05	.....	$386.81
148	New Hampshire Ave., between Shepherd and Upshur Sts	423.4	12	151.71	460.38	.....	612.09
149	....do	219.6	18	137.46	270.50	$207.11	615.07
150	Livingston St., between Connecticut Ave., and 37th St	225	10	57.86	329.98	28.28	416.12
151	Square 2884 in alley	193.5 117.6	12 10	161.65	454.02	.....	615.67
152	Harrison and Huntington Sts. NW	163	12	109.67	207.53	.....	317.20
153	Huntington St., between 39th and 41st Sts	691.3	10	195.47	486.43	.....	681.90
154	Montana Ave., south of Rhode Island Ave. NE	250	15	129.99	399.17	.....	529.16
155	Square 4219 in alley	120	10	65.34	138.97	.....	204.31
156	Seventeenth St., between B and East Capitol Sts. NE	391.7	15	183.36	503.70	.....	687.06
157	Sixth St., between Hamilton and Savannah Sts. SE	654.3	10	189.77	645.67	21.19	856.63
158	Chesapeake St., between Belt Road and 40th St. NW	169	8	36.24	175.97	26.57	238.78
159	Dahlia St., 5th and Piney Branch Road	10	10	3.57	3.50	.....	7.07
160	Georgia Ave., between Whittier Place and Aspen St	109.5	12	35.15	116.47	30.88	182.50
161	Square 785 in alley	34.5	10	9.57	37.63	.....	47.20
162	K St., between 9th and 10th Sts. NE	153.9	12	60.22	271.43	6.54	338.19
163	Connecticut Ave., between Legation and Keokuk Sts	260	10	80.25	252.82	.....	333.07
164	Connecticut Ave., between Kanawha and Jocelyn Sts	252	10	64.67	235.91	.....	300.58
165	Columbia Road, between 11th and 13th Sts	521	12	182.87	639.59	.....	822.46
166	Massachusetts Ave., T, and 24th Sts. NW	445.7	12	156.02	514.55	32.29	702.86
167	Ninth St. NW., between Buchanan and Allison Sts	131.2	10	61.63	196.50	.....	258.13
168	8th St. north of Alabama Ave. SE	240	10	62.55	245.43	3.41	311.39
169	Girard St. between 14th and 15th Sts	197	10	51.09	251.11	.....	302.20
170	Potomac Ave. SE. between 2d and 3d Sts	261.3	12	95.34	289.99	27.72	413.05
171	Grant Road, Nourse Road, and Chesapeake St	200	8	39.76	292.70	22.57	355.03
172	Dennison St., Belt Road, and Sheridan St	223.5	8	42.94	150.50	.....	193.44
173	Nichols Ave. between Portland and Orange Sts. SE	3 452	8 10	161.65	599.03	.....	760.68
174	Raleigh Place between Nichols Ave. and 7th St. SE	599.2	10	179.51	645.84	42.53	867.88
175	7th St. between Raleigh and Portland Sts. SE	232	10	80.82	268.80	5.25	354.87
176	Orange St. between Nichols Ave. and 7th St. SE	368.2	10	110.58	355.49	.....	466.07
177	Square 2559, in alley	23	12	8.63	10.50	11.41	30.54
178	N. H. Ave. NW. between T and U Sts.	401 111 42	15 12 6	234.31	767.08	11.41	1,012.80
179	....do	51 132	12 10	87.28	271.41	.....	358.69
180	16th St. SE. between A and East Capitol Sts	245.4	12	82.05	322.12	.....	404.17
181	9th St. NE. south of C St	164	12	61.82	152.56	27.49	241.87
182	18th St. between Lawrence and Monroe Sts. NE	259	12	71.93	242.41	.....	314.34
183	Allison St. between 14th and 15th Sts	60.4	12	18.62	66.31	.....	84.93
184	F St. between 24th and 25th Sts	234.4	12	91.99	319.51	28.32	439.82
185	14th St. between Kearney and Lawrence Sts. NE	360.6	10	98.93	353.55	.....	452.48
186	Conn. Ave. between Kanawha and Jocelyn Sts	224	10	76.82	287.75	.....	364.57
187	Kearney St. between 16th and 17th Sts. NE	286.6	12	111.87	307.23	.....	419.10
188	Monroe St., 20th to 22d Sts., and in 22d St. NE	561	12	198.03	557.27	.....	755.30
189	....do	237	12	96.52	357.51	.....	454.03
190	Ashmead Place NE. of Connecticut Ave	90	18	76.34	294.63	11.03	382.00
191	Cottrell Place between Ashby and W Sts	330	10	107.50	393.13	.....	500.63
192	Right of way in line of Cottrell Place	150	18	103.44	240.63	.....	344.07
196	22d St. between O and Newport Place	97.5	12	30.30	174.12	79.80	284.22

TABLE No. 3.—*Statement of sewers laid under the appropriation for assessment and permit work (assessment system), for the fiscal year ended June 30, 1912*—Continued.

Order No.	Location.	Length.	Size.	Cost of— Material.	Labor.	Repaving.	Total cost.
		Feet.	*Inches.*				
198	F St. NW. between 13th and 14th Sts.	35.4	10	$29.54	$98.25	$17.38	$145.17
199	K St. NE. between 9th and 10th Sts.	83	12	47.41	114.18	.....	161.59
200	Kilbourne St. between 18th and 19th Sts.	15	12	5.20	17.17	2.49	24.86
201	Sherman Ave. between Euclid and Fairmount Sts.	298	10	96.27	341.27	13.65	451.19
202	14th St. between Lawrence and Monroe Sts. NE	231.4	10	63.28	337.19	.....	400.47
203	Quebec Place between Georgia Ave. and Warder St.	323.5	12	102.78	320.86	.....	423.64
204	12th St. between Girard and Franklin Sts. NE	268	12	84.53	328.39	55.55	468.47
205	2d St. SE. between E St. and North Carolina Ave.	46.7 61	12 10	44.96	120.24	.....	165.20
206	Irving St. between 14th and 15th Sts.	465	10	140.85	388.22	.....	529.07
207	Macomb St. between 34th and 35th Sts.	627	12	218.63	510.11	.....	728.74
208	Pennsylvania Ave. SE. between 28th and 30th Sts.	444.2	12	156.83	611.90	.....	768.73
209	30th St. between Pennsylvania Ave. and R St. SE	474	10	61.44	13.91 216.66	.....	292.01
210	Macomb St. between 34th and 35th Sts.	27	18	16.77	200.79	.....	217.56
211	Lowell St. between 34th and 35th Sts.	547	12	204.43	504.40	.....	708.83
212	34th St., Lowell to Macomb Sts. NW.	344	15	166.02	411.24	.....	577.26
213	5th St. NE. between M St. and Florida Ave.	203.7	12	84.96	217.76	24.27	326.99
214	Kearney St. NE. between 22d and 24th Sts.	344.8	10	100.36	326.50	.....	426.86
215	Wisconsin Ave. between Woodley Road and Lowell St.	219.7	10	84.18	376.04	.....	460.22
216	Morrison St. between 39th and Belt Road	700	10	196.76	782.09	75.79	1,054.64
217	C St. NE. between Warren St. and Tennessee Ave.	132.8	10	57.09	158.54	.....	215.63
218	Monroe St. between 18th and 19th Sts. NW	75	12	25.50	90.77	12.33	128.60
219	6th St. NE. between C and D Sts.	20	12	7.44	25.50	1.88	34.82
222	Square 3051, in alley	121.4	10	54.75	168.88	.....	223.63
223	Irving St. between 26th and South Dakota Ave. NE.	115	8	26.00	110.14	28.09	164.23
224	Massachusetts Ave. between Sheridan and Decatur Sts.	25	12	8.95	46.14	6.30	61.39
225	South Carolina Ave. between 14th St. and Kentucky Ave.	284.3	10	119.36	392.08	.....	511.44
226	Pennsylvania Ave. between 12th and 13th Sts. SE.	50	12	16.85	48.65	8.55	74.05
227	9th St. between Alabama Ave. and Portland St. SE.	371	10	113.84	426.30	.....	540.14
228	Morrison St. between 39th St. and Belt Road	53	10	31.62	153.15	51.12	235.89
229	G St. SW. between Water and 10th Sts.	127.9	10	36.66	204.56	(1)	241.22
230	Virginia Ave. between 9th and 10th Sts. SE.	259.9	10	93.58	295.13	10.02	398.73
231	Square E 3535, in alley	413.5	10	130.07	[2] 648.53	.....	[2] 778.60
232	S St. between 13th and 14th Sts. SE.	445.1	24	370.89	753.45	.....	1,124.34
233	....do.	542.8	24	422.34	668.40	.....	1,090.74
234	Lincoln Road, Rhode Island Ave. to V, and in V St. NE.	495	12	229.15	765.91	83.80	1,078.86
235	Iowa Ave. north of Decatur St.	6	8	2.16	8.00	.53	10.69
236	Franklin St. between 13th and 14th Sts. NE.	428	10	104.15	599.53	198.03	901.71
237	Rhode Island Ave. NE. east of 1st Place	247.3	10	103.86	171.78	.....	275.64
238	S St. NW. between 7th and 8th Sts.	125.6	12	59.89	208.52	10.08	278.49
239	Summit Place between V and Uhland Terrace	140	10	76.05	204.13	.....	280.18
240	Summit Place between Adams Mill and Quarry Roads	450	8	121.76	479.79	.....	601.55
241	V St. between Conduit Road and 48th St.	450	15	215.60	525.08	.....	740.68
245	Nichols Ave. north from Orange St. SE.	516	8	141.68	444.83	(1)	586.51
246	Franklin St. NE., between 14th and 15th Sts.	147	10	42.58	204.49	35.00	282.07
248	East side Tennessee Ave., between B and C Sts. NE.	13.5	10	5.06	19.81	.....	24.87

[1] Repaving charge not received from surface division.
[2] Includes $150 for excess excavation done under job 1072.

TABLE No. 3.—*Statement of sewers laid under the appropriation for assessment and permit work (assessment system), for the fiscal year ended June 30th, 1912*—Continued.

Order No.	Location.	Length.	Size.	Cost of— Material.	Labor.	Repaving.	Total cost.
		Feet.	*Inches.*				
250	7th St., between Taylor and Upshur Sts	285	10	$102.97	$314.58	.....	$417.55
251	Fessenden Place, between 41st and 42d Sts	359	10	124.96	348.38	.....	473.34
252	Square 1015, in alley	304.7	12	126.52	400.86	.....	527.38
253	Upshur St., between 7th and 8th Sts	129.9	12	41.42	127.06	.....	168.48
254	8th St. NE., between L and West Virginia Ave	307.8	15	181.83	611.95	$5.08	798.86
255	14th St. NE., between Brentwood and Franklin	231	10	74.65	269.02	.....	343.67
256	Pennsylvania Ave. NW., between 17th and 18th Sts	36.5	12	13.88	83.85	16.64	114.37
257	Pennsylvania Ave. SE., between So. R. R. Ave. and Minnesota Ave	178.6 188.4	15 12	190.39	608.46	1.20	800.05
258	Square 2558, in alley	69	12	22.05	66.42	35.62	124.09
259	Brown St., south of Meridian Place	74.8	12	24.75	92.95	11.09	128.79
260	Kentucky Ave. SE., between 16th St. and Potomac Ave	365	10	96.79	326.16	.....	422.95
261	Wisconsin Ave., between Garrison and Harrison Sts	416.6	10	119.70	457.30	69.33	646.33
262	Lexington St. NE., between 6th and 7th Sts	352	10	120.44	348.66	.....	469.10
263	Park Place, between Manor and Newton Sts	134.6 70.4	12 10	96.01	291.39	5.65	393.05
264	South Capitol, between C and B Sts	326	12	119.28	327.01	.....	446.29
265	C St. SW., between South Capitol St. and Delaware Ave	324.5	15	182.69	388.14	54.90	625.73
266	N St. NW., between 33d and 34th Sts	58	12	19.81	96.90	38.53	155.24
267	13th St. NE., between C and D Sts	321	10	119.52	291.18	.....	410.70
268	Square 265, in alley	157.4	8	45.79	149.25	.....	195.04
269	K St. NE., between 10th and 11th Sts	189	12	61.95	227.59	10.81	300.35
270	23d St. NW., between New York Ave. and D St	265	12	84.22	345.67	.....	429.89
271	Minnesota Ave., between White Place and 23d St	199.5	10	78.72	201.51	5.78	286.01
272	R St., between 18th and 19th Sts	11.8	10	18.68	38.75	9.20	66.63
273	Square 449, in alley	13.5	8	3.19	13.50	3.50	20.19
274	Q St., between 25th and 27th Sts. SE	163.9	10	51.15	[1] 122.76	.....	[1] 173.91
275	Square 210, in alley	31.5	12	10.14	46.83	11.50	68.47
276	F St., between 14th and 15th Sts	255	12	123.63	502.74	69.23	695.60
277	8th St., between Portland and Alabama, SE	128	10	54.95	45.03	.....	99.98
278	Alabama Ave., between 9th and 10th Sts. SE	340	10	102.39	415.93	.....	518.32
279	Shepherd St., between 8th and New Hampshire Ave	115.8	10	54.74	247.59	18.54	320.87
280	Georgia Ave., north of Kenyon St	21.5	10	6.23	7.25	4.95	18.43
281	D St NW., between 3d and 4th	107	12	53.51	142.93	.....	196.44
282	25th St. SE. to Naylor Road	371.1	10	125.62	357.57	.....	483.19
283	South Carolina Ave. SE., between 2d and 3d Sts	168	12	104.85	294.73	.....	399.58
284	Jefferson St. NW., between 8th and 9th Sts	300	10	113.25	374.72	3.75	491.72
285	Gallatin St., between Piney Branch Road and Iowa Ave	244.4	12	83.72	176.00	4.42	264.14
286	Keokuk St., between 39th and 41st Sts	549.7	12	206.55	799.60	81.05	1,087.20
287	41st St., between Jenifer and Ingomar	246.4	10	83.95	243.08	.....	327.03
288	Ingomar St., between 39th and 41st Sts. NW	729	10	210.82	512.69	.....	723.51
291	Madison, between 14th and 16th NW	647.4	12	109.43	427.10	.....	536.53
292	....do	294	12	111.23	379.20	.....	490.43
294	Potomac Ave. SE., between 16th and 17th Sts	300.5	12	136.60	340.21	.....	476.81
296	2d St. NE., between T and U Sts	243 21 6	18 12 6	166.24	413.05	.....	579.29
297	....do	150	15	85.91	246.10	.....	332.01
298	2d St., T and U, and U; 2d, Summit and Todd	(2)	(2)	.....	31.87	.....	31.87
299	Mills Ave., south of Rhode Island and Rhode Island east of Mills, NE	334	10	107.70	414.81	.....	522.51
300	Bancroft Place, between 23d and 24th Sts	300	15	152.75	473.40	.....	626.15
301	....do	262	15	133.05	248.39	.....	381.44
302	Kenyon St., between 18th and 19th Sts	276.6	12	109.69	602.26	.....	711.95
	Total	51,558.3	.....	18,112.45	57,999.73	1,979.15	78,091.33

[1] Includes $30 for excessive excavation done under job 1081. [2] To be reported in 1912.

TABLE No. 4.—*Statement of sewers laid under miscellaneous trust-fund deposits, fiscal year ended June 30, 1912.*

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit.	Cost of work.	Amount returned.	For whom done.
1000	Square 345, in alley	137	12	Work started 1911.	$325.00	$294.38	$30.62	A. Lisner.
1001	Second Street between U and V Streets	108.3	12		[1] 301.55	265.50	36.05	H. Wardman.
1002	Galena Street between Sherrier and Potomac	200 268	10 10		630.00	420.20	209.80	Potomac Heights Land Co.
1003	Jefferson Street between Georgia and Illinois Avenues	100	10		230.00	174.09	55.91	M. Wiegand.
1004	South end Capitol and B Streets SE	21	18		[2] 70.31	70.31		Elliott Woods.
1005	Square 988, in alley	23.5	12		80.00	77.42	2.58	W. A. Greer.
1006	Do	82	12		190.00	166.90	23.10	Do.
1007	G Street between Tenth and Eleventh Streets NW			Sewer abandoned.	25.00	1.74	23.26	A. Lisner.
1008	Northwest section of Capitol Grounds			do	[2] 80.14	80.14		Superintendent Capitol Building.
1009	Square 1073, in alley	244	10		385.00	289.45	95.55	H. J. Beiber.
1010	Otis Street between Thirteenth and Holmead	20	12		70.00	34.37	35.63	J. B. McDonnell.
1011	Parcel 103-19 in line of Eighth Street	300	10		270.00	249.68	20.32	B. T. Galloway.
1012	Square 2107, in alley	339.5	10		680.00	627.13	52.87	G. C. Pumphrey.
1013	Square 111, in alley	7	12		30.00	18.87	11.13	M. D. Magee.
1014	Newton Place and right of way in square 3036	297	10		420.00	355.92	64.08	Middaugh & Shannon.
1016	Eighth Street between Ingraham and Jefferson	40	8		60.00	57.37	2.63	D. F. Groff.
1017	Square 701, in alley	82	10		160.00	120.08	39.92	G. W. Linkins.
1019	New York Avenue west of Ninth Street	13	12		36.00	28.43	7.57	P. H. Russell.
1020	Georgia Avenue between Webster and Allison Streets	8	10		20.00	15.08	4.92	J. S. Gruver.
1021	R Street west of Twenty-ninth Street NW	102.5	10		150.00	117.17	32.83	Mary E. Myers.
1022	Belt Road between Harrison and Huntington Streets	243	10		390.00	333.15	56.85	T. J. Fisher Co.
1023	Tenth Street SW. Maryland Avenue to C Street	27.5	10		50.00	43.10	6.90	P. G. Sauer.
1024	Pennsylvania Av nue between Sixth and Seventh Streets NW	11	12		65.00	48.34	16.66	Christiani Drug Co.
1025	Church Street west of Sixteenth Street NW	17.5	12		30.00	24.61	5.39	Joseph Bailey.
1026	Square 475, in alley	30 53	12 10		180.00	159.95	20.05	J. W. Glennan.
1027	I Street SE. between South Capitol and Half Streets	240	12		300.00	299.23	.77	Philadelphia, Baltimore & Washington R. R.
1028	Kansas Avenue and Allison Street NW	130	6		330.00	111.17	218.83	R. I. Carr.
1029	E Street between Sixth and Fourteenth Streets NW	39	10		[3] 163.71	163.71		Postal Telegraph Co.
1030	W Street NW. between North Capitol and First Streets	20	12		40.00	24.55	15.45	W. C. Blundon.
1030-A	W Street between North Capitol and First Streets	13.6	12		30.00	22.32	7.68	C. E. Wire.
1031	Square 175 in alley	15	10		40.00	23.55	16.45	J. Maury Dove.
1032	Woodland Drive between Twenty-ninth Street and Rock Creek Drive	463.5	18		1,050.00	785.53	[4] 264.47	Massachusetts Avenue Heights Syndicate.
1033	Do	324	15		650.00	482.73	[4] 167.27	Do.
1034	Do	379	15		650.00	515.56	[4] 134.44	Do.

[1] In addition work amounting to $248.45 was done in 1911.
[2] Capitol appropriations.
[3] General deposit.
[4] Balance not returned to depositor; but reserved for 1913 work.

TABLE No. 4.—*Statement of sewers laid under miscellaneous trust-fund deposits, fiscal year ended June 30, 1912*—Continued.

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit.	Cost of work.	Amount returned.	For whom done.
1035	Woodland Drive between Twenty-ninth and Thirtieth Streets	421	10		$650.00	$509.25	[1] $140.75	Massachusetts Avenue Heights Syndicate.
1036	Eighth Street between Allison and Buchanan	60	6		100.00	55.88	44.12	D. J. Partelle.
1037	Thirty-fifth Street between N and O Streets NW	5	8		15.00	9.35	5.65	Ellen Sullivan.
1038	D Street SE. between Fifteenth and Sixteenth Streets	5	12		15.00	11.50	3.50	Geo. Nesline.
1039	Twenty-fifth Street NW. south of K Street	65	12		110.00	96.65	13.35	H. A. Kite.
1040	Pennsylvania Avenue between Third and Four-and-a-half Streets	34	12		175.00	171.25	3.75	National Mosaic Co.
1041	Square 101, in alley	8.5	12		20.00	15.73	4.27	J. O. Holmes.
1042	Rock Creek Drive between Woodley and Twenty-eighth Streets	220	12		570.00	438.32	[1] 131.68	Massachusetts Avenue Heights Syndicate.
1043	Eighteenth and Pennsylvania Avenue NW			Relocate MH	50.00	43.31	6.69	Lewis Hotel Co
1044	Right of way through parcel 103-25	250	10		430.00	429.41	.59	J. S. Fraser.
1045	Water Street SW. north of P Street			Reconstruct manhole.	[2] 51.32	51.32		Capital Traction Co.
1046	Fifteenth Street opposite G Street NW	21	6		[2] 88.23	88.23		Postal Telegraph Cable Co.
1047	South side Massachusetts Avenue between Thirty-sixth Place and Wisconsin Avenue.	380	12		600.00	588.96	[1] 11.04	Massachusetts Avenue Heights Syndicate.
1048	North side Massachusetts Avenue between Observatory Circle and Thirty-fifth Street.	517.6	12		880.00	862.28	[1] 17.72	Do
1049	Davis Street between Observatory Circle and Thirty-fifth Street	349.5	21		1,050.00	1,027.34	[1] 22.66	Do.
1050	Davis Street between Thirty-sixth Place and Wisconsin Avenue	298.05	12		400.00	394.65	[1] 5.35	Do.
1051	Fulton Street between Massachusetts Avenue and Thirty-sixth Street	170	12		300.00	285.43	[1] 14.57	Do.
1052	Fulton Street between Wisconsin Avenue and Thirty-sixth Place	298.7	12		680.00	660.93	[1] 19.07	Do.
1053	Thirty-sixth Place between Fulton and Edmunds Streets	541.5	15		960.00	938.07	[1] 21.93	Do.
1054	Thirty-sixth Place between Fulton and Garfield Streets	427.7	12		700.00	688.05	[1] 11.95	Do.
1055	Thirty-sixth Street between Davis and Edmunds	275	12		450.00	431.73	[1] 18.27	Do.
1056	Thirty-sixth Street between Edmunds and Fulton	541	15		900.00	883.01	[1] 16.99	Do.
1057	Thirty-sixth Street between Fulton and Massachusetts Avenue	120	12		180.00	176.88	[1] 3.12	Do.
1058	Thirty-fifth Place between Edmunds and Massachusetts Avenue	350	12		630.00	611.62	[1] 18.38	Do.
1059	Fulton Street between Thirty-sixth Street and Thirty-sixth Place	210	12		250.00	248.88	[1] 1.12	Do.
1060	Thirty-sixth Place between Davis and Edmunds Streets	330	12		630.00	615.00	[1] 15.00	Do
1061	Observatory Circle between Massachusetts Avenue and Davis Street	323.5	24		1,030.00	949.53	[1] 80.47	Do.
1062	Davis Street between Thirty-sixth Street and Thirty-sixth Place	160.75	15		310.00	287.54	[1] 22.46	Do.
1063	Massachusetts Avenue and Edmunds Place, Observatory Circle to Thirty-fifth Street.	342.9	24		860.00	791.67	[1] 68.33	Do.
1064	Edmunds Street between Thirty-fifth and Thirty-sixth Streets	145.1	21		350.00	318.37	[1] 31.63	Do.
1065	Edmunds Street between Thirty-sixth Place and Thirty-sixth Street	155.7	18		300.00	275.15	[1] 24.85	Do.
1066	East side Wisconsin Avenue between Calvert and Edmunds Streets	196.5	12		570.00	529.28	[1] 40.72	Do.
1067	East side Wisconsin Avenue between Edmunds and Fulton Streets	185	12		350.00	315.82	[1] 34.18	Do.
1068	East side Wisconsin Avenue between Fulton and Garfield Streets	213.85	12		400.00	357.77	[1] 42.23	
1069	Massachusetts Avenue NW. between Forty-second Street and Arizona Avenue.	360	15		900.00	897.47	2.53	Wood, Donn & Deming.

1070	Mouth Massachusetts Avenue sewer			Retaining wall	250.00	[1]23.94	[1]226.06	Massachusetts Avenue Heights Syndicate.
1071	Crossing Park Drive at Thirtieth Street NW	89.7	24		149.97	149.97		Do.
1073	Thayer Street north from Woodridge	92.0 14.5	8 10		100.00	99.84	.16	W. P. Gochenour.
1074	Upshur Street between Seventh Street and New Hampshire Avenue	11.0	10		30.00	16.42	13.58	D. D. Thompson.
1075	Forty-third Street between Harrison and Jenifer Streets	218.5	8		300.00	224.47	75.53	F. J. Heider.
1077	Newport Place between Twenty-first and Twenty-second Streets NW	121	10		185.00	170.16	14.84	John L. Warren.
1078	Line Thayer Street south of Woodridge	70	8		70.00	45.20	24.80	Mrs. C. K. Andrews.
1079	....do	70	8		60.00	49.40	10.60	I. J. Baker.
1080	Crossing parked highway at Thirty-second Street	140	2′ 6″		395.00	395.00		Massachusetts Avenue Heights Syndicate.
1082	K Street NE. between Ninth and Tenth Streets	6.5	12		16.66	14.02	2.64	Middaugh & Shannon.
1083	Thirtieth Street between parked highway and Massachusetts Avenue	870	15		1,730.00	1,342.87	[1]387.13	Massachusetts Avenue Heights Syndicate.
1084	Square 75 in alley	108	10		200.00	171.04	28.96	Standard Engineering Co.
1085	Massachusetts Avenue Heights			Stormwater diversion inlet.	725.00	708.29	[1]16.71	Massachusetts Avenue Heights Syndicate.
1086	Observatory Circle, lot 1, square 1937 and Thirty-sixth Street	377.3	15		1,500.00	627.83	[1]872.17	Do.
1087	Parked highway, Rock Creek and Woodland Drives	190.5	21		300.00	226.99	[1]73.01	Do.
1088	New Hampshire Avenue, Park Road, and Monroe Street	244	10		400.00	265.72	134.28	Edwin P. Brink.
1091	Alley of square 377	50.6 27.4	15 12		250.00	186.55	63.45	H. T. Offterdinger.
1092	Hobart Place east of Sherman Avenue	487.2	12		759.00	753.27	5.73	H. Wardman.
1093	Forty-first Street between Keokuk and Jenifer	723.3	12		1,500.00	1,051.87	448.13	Thos. J. Fisher & Co.
1094	Quebec Place between Georgia Avenue and Warder Street	209.0	12		400.00	365.98	34.02	Kennedy Bros. (Inc.).
1094A	....do	194.0	12		370.00	289.82	80.18	Do.
1095	Parkway above stormwater inlet, Massachusetts Avenue Heights	70	24	Sewer crossing	1,330.78	441.19	[1]889.59	Massachusetts Avenue Heights Syndicate.
1096	W Street NW. west of Massachusetts Avenue	100 11	21 8		450.00	439.40	10.60	W. P. Lipscomb.
1097	Canal Street SW. between C and I Streets	6	12		15.00	13.00	2.00	Mary A. Ring.
1098	Parked highway, Rock Creek and Woodland Drives	310.8	24		600.00	466.35	[1]133.65	Massachusetts Avenue Heights Syndicate.
1099	....do	359.2	21		600.00	512.92	[1]87.08	Do.
1099-1	Thirty-sixth Place and Fulton Street	102	12	4 basins	145.00	137.80	[1]7.20	Do.
1099-2	Thirty-sixth Place and Garfield Street			2 basins	140.00	136.81	[1]3.19	Do.
1099-3	Thirty-sixth Place and Edmunds Street	9 84	10 12	5 basins	200.00	183.65	[1]16.35	Do.
1099-4	Thirty-sixth Street and Edmunds	108	12	....do	140.00	133.39	[1]6.61	Do.
1099-5	Thirty-sixth Street and Fulton			4 basins	140.00	136.21	[1]3.79	Do.
1099-6	Thirty-sixth Place and Davis Street	75	12	3 basins	180.00	164.35	[1]15.65	Do.
	Total	17,920.25			37,767.67	31,501.08	6,266.59	

[1]Balance not returned to depositor, but reserved for 1913 work. [2]General deposit. [3]This work incomplete.

TABLE No. 5.—*Statement of sewers laid under the appropriation for main and pipe sewers, fiscal year ending June 30, 1912.*

Order No.	Location.	Length.	Size.	Basins built.	Cost of— Materials.	Labor.	Repaving.	Total cost.
		Feet.	*In.*					
500	19th, 22d, and L Sts. NW	78 36	12 6	3	$57.05	$134.71	.....	$191.76
501	31st and K Sts. NW	15	12	1	28.16	40.14	.....	68.30
502	Florida Ave. and H. St. NE	69	10	1	26.71	66.72	.....	93.43
505	O and Water Sts. to river	75	24	.....	92.36	241.27	$22.05	355.68
506	19th and Kilbourne Sts	27	12	1	25.34	60.88	.....	86.22
507	Madison Place, north of Pennsylvania Ave	15	10	1	21.58	42.13	.....	63.71
508	Wisconsin Ave. and O St. NW	30	12	.....	9.78	51.00	4.08	64.86
509	W St. and Nicholas Ave. SE	9	12	1	20.85	51.94	.....	72.79
510	Water St., 13th and 14th Sts., SW	.....	(1)	.....	61.44	348.80	27.50	437.74
511	9th St. between G and N Sts	51	10	2	54.01	131.71	.....	185.72
512	Phelps and Bancroft Places NW	18	10	1	21.41	35.39	.....	56.80
513	36th and S Sts. NW	30	10	1	24.97	59.25	.....	84.22
514	C St. between 6th and 7th Sts. NE	24	10	1	22.46	48.39	.....	70.85
515	Irving, Lamont, and Mount Pleasant Sts	66	10	2	51.87	99.05	.....	150.92
516	V St., west of 14th St	24	12	1	16.42	50.70	.....	67.12
517	R St., opposite Sheridan Circle	15	12	.....	4.89	20.37	3.15	28.41
518	22d St. and New Hampshire Ave	18	12	2	23.74	66.56	.....	90.30
519	17th St. and Riggs Place NW	24	12	1	23.79	55.40	.....	79.19
520	8th and Varnum Sts. NW	27	12	1	17.36	53.68	.....	71.04
521	Marion St., Rhode Island Ave., and Q St	180	12	.....	73.11	214.40	.....	287.51
522	21st St. NW. between K and L Sts.	312.8	18	.....	208.41	735.69	58.61	1,002.71
523	6th St. between Keefer and Lamont	108	10	4	62.73	139.79	.....	202.52
524	19th St. and Park Road	.....	.....	2	38.61	98.44	.....	137.05
525	Square 192, in alley	.....	.....	1	9.39	33.94	.....	43.33
526	17th and C Sts. NW	21	12	2	40.83	78.89	.....	119.72
527	20th and 21st Sts., north of O St	36	10	2	42.11	90.54	.....	132.65
528	21st St., Hopkins Place, and O St.	24	10	1	23.36	42.25	.....	65.61
529	19th St. and Belmont Road	175	10	5	89.91	193.36	.....	283.27
530	13th St. between N and O Sts. NW.	152.8	12	.....	68.76	155.78	30.87	255.41
531	O St. between 12th and 13th Sts. NW	192.3	12	.....	68.59	252.83	.....	321.42
532	9th and K Sts. NW	60	18	.....	51.56	127.69	.....	179.25
533	O St. between 12th and 13th Sts. NW	123 72	10 8	5	117.54	280.10	.....	397.64
534	Georgia Ave. between Webster and Allison Sts	.....	(2)	.....	14.71	13.07	3.20	30.98
535	19th, Kenyon, Lamont, and Kilbourne	93	12	5	72.86	165.94	.....	238.80
536	Georgia Ave., Princeton, and Newton	48	10	3	64.34	123.51	.....	187.85
540	5th, 7th, 8th, and Rock Creek Church Road	.....	.....	4	98.96	177.78	.....	276.74
541	Bladensburg Road and Lévis St. NE	66	10	2	68.61	144.63	.....	213.24
542	Hopkins Place and O St	27	12	1	17.36	42.53	.....	59.89
543	1st St., south of O St	25 26	6 8	.....	7.38	50.00	.....	57.38
544	10th St., at M and O Sts	60	10	2	34.02	97.50	.....	131.52
545	Square 567, in alley	60	10	.....	24.59	77.90	44.06	146.55
546	8th and Varnum Sts. NW	67	10	2	50.00	99.75	5.54	155.29
547	16th St., Kennedy and Longfellow Sts	54	10	2	50.23	116.62	.....	166.85
548	Florida Ave. and Barry Place	347.3	24	.....	351.80	949.03	57.39	1,358.22
549	5th and Harvard Sts. NW	18	10	1	22.48	37.99	.....	60.47
551	Lincoln Road and Rhode Island Ave. NE	48	10	1	30.21	57.87	(3)	88.08
552	Reservation B, in alley	41	12	.....	35.84	166.58	.....	202.42
553	Girard St., west of 14th St	56.9	10	2	58.83	115.75	.....	174.58
557	13th and L Sts. SE	21	10	1	23.24	56.55	.....	79.79
558	Connecticut Ave. and Calvert St.	18	10	2	38.83	77.87	.....	116.70
559	Water St. between O and P Sts. SW	72 35	12 6	.....	72.97	286.49	83.88	443.34
560	Quincy St., North Capitol and 1st Sts	15	10	1	22.32	49.12	4.92	76.36
562	East Capitol and 16th Sts	21	10	1	23.24	59.69	.....	82.93
563	16th, 17th, 18th, and B Sts. NE	72	10	3	71.59	131.31	.....	202.90
565	8th St. between A and East Capitol Sts	229.8	12	.....	131.60	641.41	17.81	790.82

[1] Sluice gate.
[2] Manhole.
[3] Repaving charge not received from surface division.

TABLE No. 5.—*Statement of sewers laid under the appropriation for main and pipe sewers, fiscal year ended June 30, 1912*—Continued.

Order No.	Location.	Length.	Size.	Basins built.	Cost of— Materials.	Labor.	Repaving.	Total cost.
		Feet.	*In.*					
566	L St. between 21st and 22d Sts. NW	154.8 141.0	12 6	.....	$81.28	$596.72	$14.78	$692.78
567	Square 175, in alley	20	10	1	19.93	69.06	22.72	111.71
568	Tennessee Ave. and D St., North Carolina Ave and 15th St. NE	33	10	2	33.22	86.69	.....	119.91
569	West Virginia Ave. and 8th St. NE.	6	10	1	18.26	23.00	.....	41.26
570	27th St. and Woodley Road NW	33	10	1	25.38	49.56	.....	74.94
571	8th St. SE. between L and M Sts.	7.5	12	.....	18.46	65.25	4.95	88.66
572	Irving St., north side Georgia Ave., and Warder St.	21	10	1	24.06	46.26	3.15	73.47
573	W St. and Shannon Place	21	10	1	17.24	41.44	.....	58.68
574	17th, Gales, and Rosedale Sts. NE.	78.2 78	12 8	4	87.67	202.05	.....	289.72
575	13th and L Sts. SE., southeast corner	15	10	1	23.14	43.98	.....	67.12
576	C and Warren Sts. SE., southwest corner	24	10	1	14.50	35.82	.....	50.32
577	37th and R Sts. NW., northeast and northwest corners	60	10	2	54.69	91.93	.....	146.62
578	26th and M Sts. NW	27	10	2	45.44	101.11	19.24	165.79
579	New Hampshire Ave. and M. St. NW	25.5 51	12 10	.....	35.62	103.42	46.32	185.36
580	E St. NW. between 9th and 10 Sts.	100.5	12	.....	50.08	401.74	125.93	577.75
581	13th and K Sts., SE	36	10	1	27.18	69.00	.....	96.18
582	Massachusetts Ave. NW., opposite 34th St.	27	13	2	35.41	90.51	.....	125.92
583	Observatory Circle NW., opposite 34th St.	18	15	2	49.66	73.24	.....	122.90
584	Observatory Circle NW., 400 feet east of 34th St.	36	18	2	39.19	115.85	.....	155.04
585	Observatory Circle 800 feet east of 34th St.	24 36	24 18	2	56.92	120.00	.....	176.92
585A	....do	210	24	.....	227.93	244.33	.....	472.26
586	Observatory Circle NW., 1,300 feet east of 34th St.	24 36	24 18	2	53.92	90.46	.....	144.38
586A	....do	354	24	.....	346.42	444.32	.....	790.74
587	Massachusetts Ave. NW., 800 feet west of 30th St.	15 33	15 12	2	42.81	102.52	.....	145.33
588	Massachusetts Ave. NW., opposite 30th St.	36 33	18 15	2	58.37	108.76	.....	167.13
591	14th and Kennedy Sts., northwest and southwest corners	21 18	15 12	2	40.74	90.36	.....	131.10
594	Pennsylvania Ave., crossing 3d, 4½, and 6th Sts.	.....	(1)	.....	.....	92.50	.....	92.50
595	....do	.....	(1)	.....	.....	139.77	.....	139.77
602	6th St. between Missouri Ave. and B St.	200	24	.....	278.35	551.81	(2)	830.16
603	6th St. between B St. and Pennsylvania Ave. NW	176.5	24	.....	285.20	570.17	(2)	855.37
604	North side Pennsylvania Ave. eastward from 6th St.	294.5	24	.....	84.19	685.66	(2)	769.85
605	South side Pennsylvania Ave. eastward from 6th St.	275.3	12	.....	149.32	363.07	.....	512.39
606	Crossing Pennsylvania Ave., east side of 6th St.	64.8	24	.....	119.75	326.79	.....	446.54
607	Valley and Mount View Places SE.	42	10	2	30.76	91.26	.....	122.02
608	Pennsylvania between 3d and 4½, south side	36	10	1	25.94	70.46	.....	96.40
609	Macomb St. and Ross Place NW.	30	12	2	51.86	107.18	.....	159.04
612	1st and Prospect Sts. NE	51	15	2	50.00	108.99	.....	158.99
613	Massachusetts Ave. NW. between Wisconsin Ave and Observatory Circle	203 27	10 12	.....	113.45	234.10	.....	347.55
614	21st and A Sts. NE	.....	(3)	.....	39.58	747.75	.....	787.33
615	Marion St. between Rhode Island Ave. and Q, in alley	289	12	.....	123.69	304.64	276.41	704.74
	Total	7,171.5	.....	.....	5,764.72	15,742.21	876.56	22,383.49

[1] Not completed at end of year.
[2] Repaving charge not received from surface division.
[3] Retaining wall at mouth of sewer.

TABLE No. 6.—*Statement of sewers laid under the appropriation for suburban sewers, fiscal year ended June 30, 1912.*

Order No.	Location.	Length.	Size.	Character of work.	Material.	Cost of labor.	Re-paving.	Total cost.
		Feet.	*Inches.*					
800	Piney Branch valley, near Sixteenth and Piney Branch Road[1]				$35.57	$245.99		[2]$281.56
802	West Virginia Avenue, at Columbia Institute for Deaf	15	15		6.73	32.69		39.42
806	Fourteenth Street road, west of Sixteenth Street			Flushing chamber	175.67	207.57		383.24
808	Piney Branch, west of Sixteenth Street	134.66	10 by 10	27-foot covered apron	922.95	3,521.23		[3]4,444.18
809	Square 1842, in alley	264.2	10		91.31	229.31	$2.70	323.32
816	Butternut Street, between Fourth and Blair Road	330	18		208.23	390.41		598.64
817	Fourth Street, between Butternut and Cedar Streets	404	18		269.22	955.43		1,224.65
818	Cedar Street, between Fourth and Baltimore & Ohio R. R.	192	15		104.64	490.33		594.97
819	Piney Branch, west of Sixteenth Street NW			Apron at mouth of sewer	222.87	2,095.02		[4]2,317.89
820	Massachusetts Avenue, between T and Twenty-fourth Streets	54.5	15		46.08	116.75	30.45	193.28
821	Newton, Eighteenth and Twentieth; and Twentieth, Newton and Monroe	59	15		43.97	91.35		135.32
822	Observatory Circle, between Massachusetts Avenue and Davis Street	330.9	24		321.92	582.39		904.31
823	Davis Street, between Thirty-sixth Street and Thirty-sixth Place	160	15		82.66	191.19		273.85
824	Massachusetts Avenue and Edmunds, between Observatory Circle and Thirty-fifth Place.	343.4	24		317.09	436.88		753.97
825	Edmunds Street, between Thirty-fifth Place and Thirty-sixth Street	145.6	21		109.02	194.19		303.21
826	Edmunds Street, between Thirty-sixth Place and Thirty-sixth Street	165.7	18		91.49	170.56		262.05
827	East side Wisconsin Avenue, between Calvert and Edmunds Streets	350.07	12		128.92	375.16		504.08
828	East side Wisconsin Avenue, between Edmunds and Fulton Streets	185	12		78.65	222.13		300.78
829	East side Wisconsin Avenue, between Fulton and Garfield Streets	213.85	12		75.33	265.40		340.73
832	Massachusetts Avenue, between Arizona and Forty-second Streets	505	12		211.23	521.28		732.51
834	Cedar Street between Baltimore & Ohio R. R. and Carroll Street	162.4 245.6	10 8		137.47	543.97	(5)	681.44
835	Right of way in square 4012 and Jackson, Fourteenth to Fifteenth Streets	639	12		187.66	600.82	(5)	788.48
836	Massachusetts Avenue, between T and Twenty-fourth Streets	12 12	12 10	2 basins	6.92	24.37	9.60	40.89
837	Massachusetts Avenue, between Arizona and Forty-second Streets			Shaft	195.24	437.45		632.69
838	Champlain Avenue, between Kalorama Road and Euclid Street	275	18		224.23	653.46	32.56	910.25
839	Euclid Street, between Columbia Road and Champlain Avenue	184.3	18		117.20	485.86	21.36	624.42
840	Columbia Road, between Eighteenth and Euclid Streets	105.7	18		64.85	210.72	84.61	360.18
843	Massachusetts Avenue Heights			Storm-water diversion and inlet.	120.54	554.03		674.57
848	T Street NE., between Second and Fourth Streets	333	24		321.94	623.37		945.31
849	.....do	207 21	21 24		199.61	512.05		711.66
849A	.....do	160	21		182.94	407.28	17.33	607.55
853	Parkway Massachusetts Avenue Heights above storm inlet			Sewer crossing	116.31	303.86		420.17
854	W Street NW., west of Massachusetts Avenue	207.2 142.7 21.1	21 24 8		143.66	292.85		436.51
857	Woodland Drive, Rock Creek Drive, and Twenty-ninth Street	190.5	21		93.61	122.57		216.18

855	Rock Creek Drive, between parked highway and Woodland Drive	310.8	24		159.44	284.70		444.14
859	do	359.2	21		152.65	335.84		488.49
		7,411.30			5,967.82	17,728.46	198.61	23,894.89

[1] Continuation of 1911 work. [2] Includes job 801. [3] Includes job 803, 804, 805, 807. [4] Includes jobs 810, 812. [5] Repaving charge not received from surface division.

TABLE No. 7.—*Statement of work done under miscellaneous appropriations, fiscal year ended June 30, 1912.*

Order No.	Location.	Sewer laid. Length.	Sewer laid. Size.	Remarks.	Cost of— Material.	Cost of— Labor.	Cost of— Contingencies.	Cost of— Total cost.	Appropriations.
		Feet.	*Inches.*						
1100	L Street between Eighteenth and Twenty-second Streets NW.	72 33	12 15	12 basins reconstructed 2 basins adjusted	$122.92	$412.98	$26.80	$562.70	Repairs streets, 1911.
1101	Florida Avenue between Thirteenth and Fifteenth Streets NE.	42	12	2 basins reconstructed	37.47	144.67	9.11	191.25	Repairs streets, 1912.
1102	Seward Place and Pennsylvania Avenue and Pennsylvania Avenue and Fourth Street.			2 basins adjusted	1.62	13.01	.73	15.36	Do.
1103	Front of District of Columbia Building			Roping off grass plot		15.78	.79	16.57	Main, Municipal Building, 1912.
1104	Second and A Streets NE., Fourth and East Capitol, Third and Maryland Avenue.	15	12	1 basin	20.39	43.62	3.20	67.21	Repairs streets, 1912.
1105	Fourth and Stanton Streets			do	11.51	27.56	1.95	41.02	Do.
1106	Mount Pleasant and Irving Streets	6	12	1 basin reconstructed	19.06	35.44	2.73	57.23	Grading and improving Mount Pleasant between Sixteenth and Park Road.
1107	Ninth Street between G and N Streets	42 6	12 10	5 basins reconstructed	58.15	196.28	12.72	267.15	Repairs streets, 1912.
1108	T Street between Second and Rhode Island Avenue	3 6	10 12	1 basin built	21.28	43.09	3.22	67.59	Do.
1109	Florida Avenue NE., Thirteenth to Fifteenth Street			2 basins adjusted	13.58	28.62	2.11	44.31	Improvement and repair, northeast schedule, 1912.
1110	Wisconsin Avenue, Dumbarton Avenue, O and P Streets.	15 12	12 10	3 basins reconstructed	26.24	115.75	7.10	149.09	Repairs streets, 1912.
1111	Wisconsin Avenue south of Dumbarton			1 basin top replaced	5.76	3.87	.48	10.11	Do.
1112	N Street NW. between Fourth and Fifth Streets	18	12	2 basins abandoned	37.83	89.09	6.35	133.27	Do.
1113	Wisconsin Avenue and P Street NW			1 manhole adjusted	3.91	5.88	.49	10.28	Do.
1114	Chester and W Streets, Thirteenth and W Streets, Anacostia.			2 basins adjusted	2.72	15.25	.90	18.87	Repairs county roads, 1912.
1115	Phelps Place and S Street	42	10	1 basin reconstructed	27.03	60.31	4.37	91.71	Paving Phelps Place north of S Street.
1116	Nineteenth Street and Belmont Road	15	12	do	20.33	42.00	3.12	65.45	Repairs streets, 1911.
1117	First Street between N and P Streets			Connections 3 conduit manholes to sewer.	5.36	93.71	5.00	105.07	Capitol power plant.

TABLE No. 7.—*Statement of work done under miscellaneous appropriations, fiscal year ended June 30, 1912*—Continued.

Order No.	Location.	Sewer laid.		Remarks.	Cost of—				Appropriations.
		Length.	Size.		Material.	Labor.	Contingencies.	Total cost.	
		Feet.	*Inches.*						
1119	Fourteenth and U Streets NE	15	12	1 basin built	$18.96	$76.05	$4.75	$99.76	Repairs to county roads, 1912.
1120	Potamac Aveneue and M Street NW	9	12	do	21.09	34.94	2.80	58.83	Water high service, 1912.[1]
1121	New Hampshire Avenue between L and Twenty-second Streets NW.			2 basins adjusted	1.62	31.50	1.66	34.78	Repairs to streets, 1912.
1122	Eighth and Upshur Streets NW	21	12	1 basin reconstructed	16.23	51.39	3.38	71.00	Do.
1123	Square 444, in alley			(1)					
1124	Ninth and N Streets NW., NW corner	6	12	1 basin reconstructed	19.41	38.49	2.90	60.80	Repairs to streets, 1912.
1125	H Street west of Fifteenth Street	6 9	12 6	do	19.68	40.57	3.01	63.26	Do.
1126	Fourth and K Streets NE	6	12	1 basin built	19.03	56.72	3.79	79.54	Northeast schedule, 1912.
1127	Kentucky Avenue between B Street and Lincoln Park	24	12	2 basins built	33.79	70.42	5.21	109.42	Improvement and repair, southeast schedule, 1912.
1128	Seventeenth Street between B and E Streets NW			5 gutter drops abandoned.	.49	16.12	.83	17.44	Grading and improving Seventeenth Street NW between B and E Streets.
1130	Eighth, Ninth, Eleventh, and T Streets NW	21	12	3 basins reconstructed	46.34	129.85	8.86	185.05	Repairs to streets, 1912.
1131	Twenty-first and O Streets	3	10	1 basin reconstructed	18.09	43.21	3.07	64.37	Do.
1133	Rock Creek Church Road, Spring to Georgia Avenue			Raising manhole to grade.	22.82	60.12	4.15	87.09	Repairs to county roads, 1912.
1134	Ninth and K Streets NW	27	12	1 basin reconstructed	15.38	36.89	2.61	54.88	Repairs streets, 1912.
1135	O Street NW. between Twelfth and Thirteenth Streets	72	8	2 gutter drops	29.23	46.44	3.78	79.45	Do.
1136	Eight Street and Florida Avenue NW	6	12	1 basin reconstructed	18.05	43.55	3.06	64.68	Do.
1137	Thirteen-and-a-half Street between C and D Streets NW.			1 gutter drop abandoned.		5.76	.29	6.05	Northwest schedule, 1912.
1138	O Street at Twelfth, Thirteenth, and Vermont Avenue	27	10	4 basins abjusted	33.32	64.80	4.91	103.03	Repairs to streets, 1912.
1139	Pennsylvania Avenue SE. west of Thirteenth Street			1 basin abandoned		7.09	.35	7.44	Do.
1140	Tenth and N Streets and Tenth and O Streets NW	60	10	2 basins reconstructed	32.79	111,18	7.20	151.17	Do.
1141	Harvard Street between Eleventh and Thirteenth Streets.	9	15		8.46	18.01	1.32	27.79	Normal School, No. 162.
1142	Rock Creek Church Road and Warder Street NW			1 basin rebuilt	16.47	46.88	3.17	66.52	Repairs county roads, 1912.
1143	Rock Creek Church Road and Georgia Avenue	27	10	1 basin built	19.44	43.87	3.17	66.48	Grading and improving Rock Creek Church Road NW., 1912.
1144	Maine Avenue SW. and Third and Four-and-a-half Streets.			2 basins rebuilt	24.85	71.00	4.79	100.64	Southwest schedule, 1912.
1145	Ninth Street south of A Street NE	18	10	1 new basin	22.80	49.68	3.62	76.10	Repairs to streets, 1912.
1146	Reservation No. 13, smallpox hospital	174	10		227.22	331.08	21.82	580.12	Prevention of contagious diseases.

1147	Union Station Plaza	37	12		143.67	721.62	42.43	907.72	General depositary Capital Traction Co.; General depositary Washington Railway & Electric Co.
1149	Southeast corner Rock Creek Church Road and Princeton Place.	48	10	1 new basin	44.26	93.89	6.91	145.06	Repairs to county roads, 1912
1150	Anacostia, south of Howard Avenue			Coping on outfall sewer wall.	1.18	24.85		26.03	Unused balances.
1151	Kenyon Street between Georgia Avenue and Warder Street.			1 basin adjusted	3.69	19.37	1.15	24.21	Repairs to streets, 1912.
1152	Thirtieth Street, Pennsylvania Avenue, and R Street SE.	242.5	10		67.60	590.83	32.92	691.35	Appropriation for school, No. 166.
1153	Fourteenth Street between Girard and Hamilton	755	10	Continuation of defaulting contract.	98.71	1,013.14	51.99	1,163.84	Assessment and permit, 1911.
1154	Rock Creek Valley between P Street and Massachusetts Avenue.	16.44 28.00	60 by 33.60		94.33	629.31		723.64	[2] Rock Creek main interceptor.
1156	Twenty-third Street trunk to Rock Creek main interceptor.	50	10		22.82	70.75		93.57	Suburban sewers, 1912.
1160	Square 1043, in alley	105	10		56.09	219.36	13.77	289.22	Street-cleaning stable, 1912.
1161	New Jersey Avenue SE. between M and N Streets			Sluice gate	42.31	403.96		446.27	Unused balance.
1162	New Jersey Avenue and L and Pierce Streets	90	10	3 basins	59.32	137.46	9.84	206.62	Repairs to streets, 1912.
1163	Eighth and S Streets NW	12	10	2 basins	26.31	80.49	5.34	112.14	Do.
1165	Square 1255, in alley	18	12	1 alley basin	16.16	33.62		49.78	Metropolitan police, 1911–12, repairs, station.
1170	Seventh and B Streets SW	33	10	1 basin reconstructed	29.11	67.74	4.77	101.62	Assessment and permit, streets, 1912.
1171	Cedar Street subway at Baltimore & Ohio R. R. crossing.	414	21		290.77	590.95	44.09	925.81	Repairs, county roads, 1912.
1173	Twelfth and Walter Streets SE			1 basin rebuilt	9.96	38.29	2.41	50.66	Assessment and permit, streets, 1912.
1174	Rock Creek, 500 feet west of Connecticut Avenue Bridge.	150	15		78.52	168.08		246.60	Rock Creek main interceptor.
1176	Pennsylvania Avenue and Twenty-second Street NW., southeast corner.	21	12	1 basin rebuilt	15.32	41.94	2.86	60.12	Repairs to streets, 1912.
1177	Chamber, south of Massachusetts Avenue			1 sluice gate	5.96	134.90		140.86	Rock Creek main interceptor.
1178	Front of District of Columbia building			Roping parking		29.18	1.46	30.64	Maintenance, District of Columbia building.
1179	Pennsylvania Avenue			Roping	12.50	270.91	14.17	297.58	Metropolitan police, District of Columbia, 1912.
1180	Smallpox Quarantine Station			Disinfecting tank	117.22	407.33	25.93	550.48	Prevention of contagious diseases, 1912.
	Total	2,896.94			2,357.53	8,700.49	455.73	11,513.75	

[1] Municipal architect obligated appropriation for "Addition to McKinley Training School," to pay for this sewer, amounting to $726.16. On completion of work by Sewer Department it was discovered that the architect had not reserved the necessary funds to pay for same. Sewer paid for out of sewer appropriation. See job 615.
[2] Includes work done under job 1169.

TABLE NO. 8.—*Sewage-disposal system, District of Columbia, construction.*

Contract No.	Contractor.	Location.	Character of work.	Payments on contracts.	Materials.		Cost of—				Total cost.	Completed.	Appropriation.
					Charged to contractor.	Not charged to contractor.	Inspection.	Material.	Labor.	Repairs to pavements.			
4761	E. G. Gummel	Valley of Rock Creek, P Street to Massachusetts Avenue.	Rock Creek main interceptor.	$13,491.58	$2,276.04	$75.36	$848.00	.....	.....	.....	$16,690.98	Yes	Rock Creek main interceptor.
4810	Geo. Hyman	Twentieth Street NE., Monroe to Bunker Hill Road.	East side interceptor	19,184.85	2,918.40	.....	1,062.00	.....	.....	.....	23,165.25	No	East side interceptor.
4950	W. F. Brenizier Co.	East side of Anacostia River, Poplar Point to Anacostia Bridge.	Anacostia main interceptor.	10,648.00	1,554.00	.....	186.50	.....	.....	.....	12,388.50	No	Anacostia main interceptor.
4961	Geo. Hyman	Valley of Rock Creek, Massachusetts to Connecticut Avenues.	Rock Creek main interceptor.	20,029.32	4,411.00	52.63	701.25	.....	.....	.....	25,194.20	Yes	Rock Creek main interceptor.
5068	do	Bunker Hill Road NE., Twentieth Street extended to Sargent Road.	East side interceptor	3,519.35	1,014.90	.....	354.75	.....	.....	.....	4,889.00	No	East side interceptor.
		Total	.....	66,873.10	12,174.34	127.99	3,152.50	.....	.....	.....	82,327.93		

TABLE No. 9.—*Inspectors and other employees of sewer division, temporarily employed, and the appropriations from which paid, fiscal year ended June 30, 1912.*

[This table includes the cost of 1 employee of record room, 1 employee of surveyor's office, carried on rolls for four months, and also of 4 employees of the purchasing office.]

Appropriations.	Inspectors.	Overseers.	Other employees.
Construction sewerage system:			
Main and pipe sewers	$855.00	$993.13	$1,737.25
Suburban sewers	2,380.00	193.19	2,317.13
Assessment and permit work	2,288.75	357.12	2,573.13
Miscellaneous trust-fund deposits	.....	68.00	.....
Improvements and Repairs "Streets"	.....	42.00	.....
Construction sewage disposal system:			
East side interceptor to Brookland	1,416.75	.....	156.00
Rock Creek main interceptor	1,026.75	.....	185.50
Anacostia main interceptor	73.00	.....	175.63
Unused balances	.....	7.50	.....
Maintenance:			
Cleaning and repairing	337.75	123.75	96.00
Maintenance and operation S. P. S	192.00	.....	696.00
Total	8,570.00	1,784.69	7,936.64

TABLE No. 10.—*Average cost of labor and material of pipe sewers (per linear foot) and storm water receiving basins constructed by day labor.*

Size of sewer.	Length.	Cost of—		Total.
		Labor.	Material.	
8-inch diameter	2,440.40	$1.063	$0.254	$1.317
10-inch diameter	19,785.44	1.082	.329	1.411
12-inch diameter	20,822.42	1.204	.392	1.596
15-inch diameter	3,329.50	1.458	.561	2.019
18-inch diameter	1,245.30	1.625	.673	2.298
21-inch diameter	890.30	1.702	.882	2.584
24-inch diameter	4,028.10	1.765	.981	2.746
Basins (each including connection to sewer)	.....	.....	.....	68.32

TABLE No. 11.—*Average cost of pipe sewers for 10 years.*

Year.	8-inch diameter.		10-inch diameter.		12-inch diameter.		15-inch diameter.		18-inch diameter.		21-inch diameter.		24-inch diameter.	
	Labor.	Material.	Labor.	Material.	Labor.	Material.	Labor.	Material.	Labor.	Material.	Labor.	Material.	Labor.	Material.
1903	$0.80	$0.36	$1.03	$0.53	$1.09	$0.54	$1.32	$0.73	$1.52	$0.81	$1.57	$1.06	$1.74	$1.32
1904	.97	.36	.92	.55	1.17	.65	1.45	.81	1.61	.91	1.94	.24	2.24	1.47
1905	.98	.38	.96	.55	1.19	.60	1.41	.77	1.45	.89	1.92	1.01	1.87	1.43
1906	.87	.33	1.19	.47	1.26	.54	1.41	.67	1.53	.78	1.88	.93	2.45	1.24
1907	1.42	.43	1.43	.48	1.30	.56	1.46	.70	1.82	.85	2.09	.98	2.78	1.26
1908	1.34	.42	1.26	.50	1.44	.61	1.69	.75	1.91	.90	1.74	1.14	3.65	1.50
1909	1.34	.36	1.16	.36	1.46	.46	1.59	.56	1.58	.62	1.07	1.91	1.91	1.18
1910	1.00	.29	.99	.35	1.12	.43	1.19	.52	1.49	.66	.85	1.72	1.72	1.14
1911	1.01	.27	1.02	.32	1.17	.40	1.36	.52	1.64	.67	.75	1.82	1.82	1.08
1912	1.06	.25	1.08	.33	1.20	.39	1.46	.56	1.63	.67	1.70	.88	1.76	.98

TABLE No. 12.—*Summary of sewerage system for 20 years.*

Fiscal year.	Total cost of sewerage system.	Cost of sewerage system for each year.	Total miles trunk sewers.	Total miles pipe sewers.	Annual cost of maintenance of sewerage system.	Cost of sewage-disposal system for each year.	Annual cost of maintenance of sewage-disposal system.
1893	$8,007,721.62	$165,000.00	68.37	238.45	$45,000.00	.....	.....
1894	8,298,931.62	291,210.00	71.32	250.13	45,000.00	$86,704.34	.....
1895	8,476,431.62	177,500.00	74.48	260.20	45,000.00	86,961.74	.....
1896	8,661,731.62	185,300.00	77.65	270.28	45,000.00	60,836.57	.....
1897	8,901,731.62	240,000.00	81.36	284.06	50,000.00	126,572.97	.....
1898	9,047,731.62	146,000.00	83.92	298.91	50,000.00	201,218.32	.....
1899	9,183,731.62	136,000.00	85.65	307.36	50,000.00	227,759.75	.....
1900	9,309,731.62	126,000.00	88.30	317.20	50,000.00	203,761.05	.....
1901	9,515,731.62	206,000.00	90.89	327.86	50,000.00	343,865.52	.....
1902	9,696,731.62	181,000.00	93.49	338.13	58,000.00	228,554.36	.....
1903	9,817,731.62	121,000.00	96.31	351.73	58,000.00	288,554.54	.....
1904	9,940,731.62	123,000.00	99.12	357.70	58,000.00	180,203.32	.....
1905	10,040,881.62	100,150.00	103.21	365.60	58,000.00	637,450.69	.....
1906	10,128,881.62	88,000.00	109.09	375.26	42,000.00	706,514.55	.....
1907	10,363,881.62	235,000.00	112.20	389.24	38,000.00	335,865.28	$37,295.00
1908	10,536,681.62	172,800.00	113.94	407.24	44,500.00	237,945.65	38,625.00
1909	10,688,681.62	152,000.00	117.24	424.02	45,000.00	79,119.62	58,000.00
1910	10,860,556.62	171,000.00	119.20	448.78	48,500.00	63,742.43	58,000.00
1911	11,204,188.79	343,632.17	122.78	469.42	50,000.00	50,597.31	58,000.00
1912	11,539,374.28	335,185.49	126.01	492.52	50,000.00	82,327.93	59,500.00

TABLE No. 13.—*Conduits laid during fiscal year ended June 30, 1912.*[1]

No. of ducts.	Washington Railway & Electric Co.		Capital Traction Ry. Co.		Chesapeake & Potomac Telephone Co.		Postal Telegraph-Cable Co.		Totals.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
1	5,983.8	5,983.8	.....	.....	2,802.7	2,802.7	.....	.....	8,786.5	8,786.5
2	1,862.3	3,724.6	.....	.....	14,125.6	28,251.2	248.0	496.0	16,235.9	32,471.8
4	33,008.4	132,033.6	4,386.0	17,544.0	2,156.4	8,625.6	33,721.8	134,887.2	73,272.6	293,090.4
6	619.0	3,714.0	.....	.....	693.0	4,158.0	16,268.0	97,608.0	17,580.0	105,481.0
8	21,192.2	169,537.6	4,866.6	38,932.8	99.0	792.0	.....	.....	26,157.8	209,262.4
9	37.0	333.0	.....	.....	.....	.....	.....	.....	37.0	333.0
10	33.0	330.0	.....	.....	.....	.....	.....	.....	33.0	330.0
12	305.5	3,666.0	138.8	1,665.6	89.0	1,068.0	.....	.....	533.3	6,399.6
16	378.0	6,048.0	25.0	400.0	.....	.....	.....	.....	403.0	6,448.0
24	464.8	11,155.2	.....	.....	.....	.....	.....	.....	468.0	11,155.2
Total	63,884.0	336,525.8	9,416.4	58,542.4	19,965.7	45,697.9	52,469.8	232,991.8	143,507.9	673,757.9

[1] This table does not include 1,799 feet of United States Government pipe lines nor 137 feet of United States Government conduit.

TABLE No. 14.—*Gas mains laid during fiscal year ended June 30, 1912.*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Totals.
	Linear feet.	*Linear feet.*	*Linear feet.*
1¼-inch	171.6	.....	171.6
2-inch	4,116.6	687.3	4,803.9
4-inch	46,353.6	8,855.7	54,909.3
6-inch	24,292.2	25,343.1	49,635.3
8-inch	.....	9,489.5	9,489.5
12-inch	13,649.0	5,802.0	19,451.0
Total	88,583.0	50,177.6	138,760.6

TABLE No. 15.—*Summary of conduits laid to June 30, 1912.*[1]

Number of ducts.	Washington Ry. & Electric Co.		Capital Traction Co.		Chesapeake & Potomac Telephone Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
1	57,216	57,216			46,816	46,816
2	136,049	272,098	15,742	31,484	238,430	476,860
3	236	708			5,640	16,920
4	410,270	1,641,080	22,681	90,724	164,904	659,616
5						
6	50,771	304,626	8,174	49,041	93,792	562,752
7			29	203	82	574
8	102,692	821,536	12,914	103,312	51,862	414,896
9	7,325	58,625			114	1,026
10	8,396	83,960	32	320	22,364	223,640
12	61,136	733,632	908	10,896	11,336	136,032
13	374	4,862			212	2,756
14	3,104	43,456	4,257	59,598	3,831	56,631
15	68	1,020				
16	4,971	79,536	401	6,416	8,037	128,584
17					636	10,812
18	2,214	39,852			4,149	74,682
20	562	11,240	830	16,600	1,407	28,140
22	134	2,948	9,109	200,398	823	18,106
24	3,176	76,224			2,270	54,480
25					304	7,600
26			280	7,280		
28	2,261	63,308				
30	53	1,590			313	9,390
32	77	2,464			485	15,520
36	3,854	138,744			26	936
38	193	7,334				
40					1,589	63,560
44	424	18,656				
56					749	41,944
58	7	406				
64	106	6,784			176	11,264
70					53	3,710
72					118	8,496
82					35	2,870
Total	855,669	4,471,905	75,357	576,272	660,553	3,078,613

[1] This table does not include 3,383 feet of United States Government conduit, 1,799 feet of United States Government pipe lines, 42 feet of Great Falls & Old Dominion Ry. Co. conduit, 879.5 feet of Washington Market Co. pipe line, and 488 feet of private conduit.

TABLE No. 15.—*Summary of conduits laid to June 30, 1912*—Continued.

Number of ducts.	Western Union Telegraph Co.		Postal Telegraph-Cable Co.		Total.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
1	41	41	15,193	15,193	119,266	119,9[illegible]
2	1,911	3,822	248	496	392,380	784,7[illegible]
3	6,940	20,820			12,816	38,4[illegible]
4	7,295	29,180	33,722	134,888	638,872	2,555,4[illegible]
5	4,177	20,885			4,177	20,8[illegible]
6	4,232	25,392	16,268	97,608	173,237	1,039,4[illegible]
7					111	[illegible]
8					167,468	1,339,7[illegible]
9					7,439	59,6[illegible]
10	183	1,830			30,975	309,7[illegible]
12					73,380	880,5[illegible]
13	309	4,017			895	11,6[illegible]
14					11,192	159,6[illegible]
15	44	660			112	1,6[illegible]
16					13,409	214,5[illegible]
17					636	10,8[illegible]
18					6,363	114,5[illegible]
20					2,799	55,9[illegible]
22					10,066	221,4[illegible]
24					5,446	130,7[illegible]
25					304	7,6[illegible]
26					280	7,2[illegible]
28					2,261	63,3[illegible]
30					366	10,9[illegible]
32					562	17,9[illegible]
36					3,880	139,6[illegible]
38					193	7,3[illegible]
40					1,589	63,5[illegible]
44					424	18,6[illegible]
56					749	41,9[illegible]
58					7	4[illegible]
64					282	18,0[illegible]
70					53	3,7[illegible]
72					118	8,4[illegible]
82					35	2,8[illegible]
Total	25,132	106,647	65,431	248,185	1,682,142	8,481,6[illegible]

TABLE No. 16.—*Summary of gas mains laid to June 30, 1912, beginning July 1, 1912.*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	Linear feet.	*Linear feet.*	*Linear feet.*
1¼-inch	1,647		1,6[illegible]
2-inch	4,334	1,068	5,4[illegible]
3-inch	1,768		1,7[illegible]
4-inch	111,265	19,125	130,[illegible]
6-inch	175,427	42,752	218,[illegible]
8-inch		13,199	13,[illegible]
10-inch		4,107	4,[illegible]
12-inch	78,605	33,309	111,[illegible]
16-inch	1,091	234	1,[illegible]
20-inch	3,068		3,[illegible]
24-inch	8,066		8,[illegible]
Total	395,271	113,794	499,[illegible]

REPORT OF THE INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., *August 20, 1912.*

SIR: I have the honor to submit herewith the annual report covering the transactions of the building division during the fiscal year ended June 30, 1912.

Statement of permits issued from July 1, 1911, to June 30, 1912.

	Number.	Value.
Brick:		
Repairs	1,618	$1,623,347
Dwellings	1,815	5,397,905
Apartments	29	1,263,939
Stores and dwellings	48	194,984
Stores	97	594,008
Stables	16	34,000
Garages	92	99,014
Sheds	18	11,702
Churches	3	29,500
Office buildings	10	779,080
Warehouses	15	64,470
Workshops	3	2,150
Engine house	1	7,000
Sunday schools	3	48,000
Hospitals	3	119,000
Cold-storage plants	2	80,000
Shops	4	11,050
Dairy	1	2,800
Studio	1	600
Masonic Temple	1	1,100,000
Lunch rooms	3	7,500
Colleges	1	80,000
Lodge	1	4,000
Bakeries	2	99,480
Hotels	2	3,200,000
Club (University)	1	175,514
Stores and offices	3	57,874
Factories	3	5,300
Stable and shipping shed	1	6,000
Boiler house	1	800
Laundry	1	3,500
Theater	1	6,000
Concrete:		
Dwelling	2	8,000
Garage	2	1,185
Steel garage	1	$125
Iron mill	1	2,350
Iron and steel foundry	1	1,500
Iron sheds	53	9,613
Frame:		
Sheds	610	25,839
Repairs	645	110,707
Dwellings	357	1,020,629
Stables	11	3,293
Garages	4	1,000
Boat houses	2	3,300
Churches	2	1,785
Greenhouses	5	1,800
Dormitory	1	4,000
Lunch room	1	1,300
Store	1	150
Store and dwelling	1	1,000
Elevators	133	241,640
Motors	192	189,315
Boilers	16	25,495
Heating apparatus	6	2,130
Gas engines	4	1,785
Gasoline engine	1	25
Oil tanks	2	5,500
Oven	1	200
Total	5,855	16,772,183
Awnings	219	16,425
Fire escapes	108	21,600
Signs	803	8,030
Grand total	6,985	16,818,238

Statement of building operations under the supervision of the United States Government.[1]

Bureau of Engraving and Printing	$1,197,420
Post-Office Building:	
Construction	2,187,000
Elevator	44,179
Mail-handling apparatus	42,750
Mechanical equipment	207,351
Total	3,678,700
Transactions of the building division, District of Columbia, total	16,818,238
Grand total	20,496,938

[1] Taken from reports forwarded by the Supervising Architect of the United States Treasury Department of building operations in the District of Columbia since October, 1911.

Comparative statement for the years 1911 and 1912.

	New buildings.	Repairs.	Dwellings.	Apartments.	Business buildings.
1912	2,535	3,300	2,174	29	225
1911	2,293	3,873	1,922	18	351
	242	[1] 572	252	11	[1] 136

[1] Decrease.

Valuation of building operations, exclusive of Federal operations:	
1912	$16,772,183
1911	14,698,034
Increase	2,074,149
Permits issued, including buildings, repairs, awnings, signs, engines, motors, elevators, etc:	
1912	6,270
1911	6,153
Increase	117
Projections beyond the building, permits for	3,286

The following summary will show the distribution of improvements in the different sections of the District and the value of same:

	Buildings.	Repairs.
Northeast	$879,150	$40,570
Southeast	559,819	49,603
Northwest	7,212,110	1,558,130
Southwest	288,300	144,295
County	5,600,867	439,339
Total	14,540,246	2,231,937

Total for buildings and repairs, $16,772,183.

Estimated number of buildings in the District of Columbia.

	Brick	Frame.
1911	56,052	25,194
1912	2,170	365
Total	58,222	25,559

NOTE.—All comparisons and general data are made and given with and of building transactions under the supervision of the building division, District of Columbia. The data furnished of Federal operations is given in this report for the sole purpose of showing the total value of building operations in the District of Columbia.

It will be noted from the above that 117 more permits were issued and that the value of building operations was $2,000,000 in excess of previous year. The increase in value is primarily accounted for by the permit issued for the New Arlington Hotel. valued at $3,000,000.

Also, whereas in the previous year there was a material decrease in the number of miscellaneous new buildings, dwellings, and apartment houses, and an increase in new buildings and repairs made, the reverse was the case in the year just ended and there was a material increase in miscellaneous new buildings, dwellings, and apartment houses and a decrease in business buildings and repairs made to existing structures.

The character of construction of both new buildings and remodeling of existing ones is improved, particularly in apartment houses, office buildings, and theaters, where fireproof construction is very generally, if not entirely, used.

The fees collected by the office for permits totaled $33,219.95, a considerable increase over the year previous, and this amount fully covered the expenses of the office for the year.

The building code was modified in some minor particulars during the year. An important change made was that affecting the location of public garages with the purpose of concentrating them in squares already in part occupied by such establishments. By the amended regulation additional garages are now permitted to be built in the same square and adjoining similar establishments without the requirement of any further consent.

The fire limits were enlarged so as to include that recently built up section of the District lying between Park Road and the Piney Branch Valley, and to the east of this to what is known as Spring Road.

The act regulating the height of buildings was amended by Congress so as to permit a combustible dwelling to be erected to a height of 55 feet instead of a limit of 50 feet, as heretofore.

Attention is invited to the joint report of the engineers and computers, upon whose expert knowledge and intelligent examination of plans, the major portion of the work of the office depends. I heartily indorse their recommendations and concur with them in the opinion that a small appropriation by Congress authorizing experts from this office to attend important tests of fireproof material and methods, made from time to time at points outside of the District, would be money well spent and followed with beneficial results to the taxpayers of the city.

As shown by the report of the inspector of fire escapes, material progress has been made during the year in securing compliance with the fire-escape law. As therein indicated 224 exterior wall escapes have been erected, but better than this, owners have found that the law must be complied with and are having their architects plan many of their buildings with additional interior stairways, thereby eliminating the necessity for exterior fire escapes.

The reports of the two elevator inspectors show the work done by them and the satisfactory condition of this branch of the service. The change in the building regulations requiring the runaway test for elevators, it is believed, has materially added to the safety of these conveyances. These two inspectors have reached the limit of their capacity in the number of elevators that may be properly examined as is required by law. At present one afternoon each week is taken up by them with the inspector of insanitary buildings, as recorder, sitting as a board, in examining applicants for license as elevator operators. This is very necessary work and has been attended with most excellent results. In order to give these inspectors the benefit of the time consumed in these examinations and in order, for a year or two at least, to forestall the necessity of an additional inspector to be detailed to elevator work, it is recommended that these examinations be held at night and that effort be made to secure the necessary authorization and funds in the next appropriation bill to compensate the three members of this examining board for this work, as are the members of the plumbing board and the examiners of applicants for steam engineers' license, allotting to each member $150 per year in addition to his regular salary.

The reports of the several assistant inspectors show the field work covered by them and the number of inspections made on all character of buildings throughout the District.

Another year's experience in the building division confirms me in the report made a year ago that generally the services of the employees of this division are not fairly and properly recompensed, and I earnestly recommend that this matter be brought to the attention of Congress, and that, as specifically enumerated in the estimates, certain of the salaries of this office be increased and means of transportation furnished. The office has been more than self-supporting during the past year, and it is believed that the taxes collected in permit fees should be returned to the community in high-class supervision and inspection.

My acknowledgments are due to the employees of the building division for the work accomplished during the past year.

Very respectfully,

MORRIS HACKER,
Inspector of Buildings.

Maj. E. M. MARKHAM,
Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner, District of Columbia.

COMPUTERS' REPORT.

WASHINGTON, *September 9, 1912.*

SIR: We have the honor to submit herewith our annual report for the fiscal year ended June 30, 1912.

The most noteworthy and progressive feature of construction during the past year has been the increase in fireproof buildings. The Riggs Building, Chase's Theater,

and many other large structures have been erected during the course of the year, in addition to which the plans of the New Arlington Hotel have been submitted to and approved by this division.

The general character of construction has markedly improved, the advancement in this regard being evidenced by the fact that fully 75 per cent of the apartment houses erected have been built of fireproof materials—an infallible indication of the substantial growth of the District. As a matter of course, with the notable activity in the manufacture of building materials, the increasing demand for and employment of fire-resisting materials, and the steady growth in the importance of buildings being erected in the District, it is essential that the care and study of plans by the computers and engineers must be maintained in the same ratio. It is respectfully submitted, therefore, that their salaries should be increased to such a figure as to render the remuneration more commensurate with the technical labor expended in a fair and, it is believed, capable discharge of their duties.

It is also urged that an appropriation be made which will enable the engineers of this division to be present at some of the many important tests which are constantly being made of fireproof materials and methods. As few of these tests are made in the District, it is necessary that such an appropriation should provide for the defraying of actual expenses incurred in attending the making of some of these tests. An appropriation of $300, it is thought, would prove sufficient, and in the knowledge gained would be most advantageously expended.

While in no sense desiring to escape the responsibility or to evade the work required, it is deemed proper to invite attention to the fact that there is no little demand made upon the engineers of this division to examine and pass upon the structural safety, etc., of Federal-leased private buildings.

Very respectfully,

T. L. COSTIGAN,
F. W. HART,
Engineers and Computers.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTOR OF FIRE ESCAPES.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to respectfully submit my annual report for the fiscal year ending June 30, 1912, as follows:

Visits to apartment houses	1,357
Visits to theaters	127
Visits to hotels	172
Miscellaneous visits, including halls, public buildings, stores, etc	721
Cases in police court	5
Notices served	447
Compliance notices mailed	174
Fire escapes erected	224
Active cases in files	270

In submitting my report I beg to state that the owners of apartment houses and other buildings requiring fire escapes for their respective buildings are recognizing the necessity for these escapes and in some instances are providing ample stairways, inclosed in fireproof compartments, in lieu of the outside standard fire escapes.

Respectfully submitted.

JAMES P. PARRY,
Inspector of Fire Escapes.

The INSPECTOR OF BUILDINGS.

REPORTS OF ASSISTANT SUPERINTENDENTS OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: In accordance with the foregoing reports of t e assistant inspectors for the fiscal year ending June 30, 1912, an increase of 180 inspections is shown over that of the previous year, amounting, respectively, to 73,112, against 72,932. This total will average 26.7 inspections daily to the credit of each field inspector.

Faithful performance of duty has been shown through the year, and it is the opinion of the men that better and more improved construction has been obtained in all buildings erected.

Very respectfully,

J. WM. DOWNING,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	1,350
Visits to old buildings	376
Visits of miscellaneous character	120
Total	1,846
Condemnation of buildings or parts thereof	18

Respectfully submitted.

EDWARD KERN,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912.

Visits to new buildings	3,903
Visits to old buildings	1,963
Visits of miscellaneous character	234
Total	6,100
Condemnation of buildings or parts thereof	28
Buildings taken down	23
Cast-iron columns inspected	15

Respectfully submitted.

F. J. NIEDOMANSKI,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	8,590
Visits to old buildings	1,575
Visits of miscellaneous character	184
Total	10,349
Condemnation of buildings or parts thereof	61
Police court cases	2

Respectfully submitted.

S. G. HUNTT,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	2,208
Visits to old buildings	1,436
Visits of miscellaneous character	614
Total	4,258
Condemnation of buildings or parts thereof	118

Respectfully submitted.

A. M. PROCTOR,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	4,100
Visits to old buildings	2,772
Visits of miscellaneous character	721
Total	7,593
Condemnation of buildings or parts thereof	110
Buildings taken down	4
Police court cases	2

Respectfully submitted.

E. G. CURTIS,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	11,839
Visits to old buildings	3,194
Visits of miscellaneous character	457
Total	15,490
Condemnation of buildings or parts thereof	55

Respectfully submitted.

A. K. SELDEN,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912:

Visits to new buildings	5,350
Visits to old buildings	3,275
Visits of miscellaneous character	275
Total	8,900
Condemnation of buildings or parts thereof	20

Respectfully submitted.

A. S. J. ATKINSON,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement furnished me by former Inspector Davis of work performed in accordance with his official duties for year ended June 30, 1912.

Visits to new buildings	10,983
Visits to old buildings	588
Visits of miscellaneous character	311
Total	11,882
Condemnation of buildings or parts thereof	62
Cast-iron columns inspected	14

Respectfully submitted.

J. W. DOWNING,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1912.

Visits to new buildings	4,880
Visits to old buildings	1,663
Visits of miscellaneous character	151
Total	6,694
Condemnation of buildings or parts thereof	18

Respectfully submitted.

J. B. HAMMOND,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTORS OF ELEVATORS.

WASHINGTON, *July 1, 1912.*

SIR: We have the honor to submit our combined annual report of elevator conditions in this city for the fiscal year 1912.

The total number of elevators installed during the year was 126, of which 44 were passenger machines and 82 freight. As a result of this office working under regulations revised to include all the best developments in the elevator field, and with the hearty cooperation of the elevator builders, the new installations have been first class in every particular of design and construction. Of special mention is the increased certainty of the proper action of the speed governors and car safety devices under emergency conditions, as demonstrated by the runaway test of all new installations.

The elevators of this city have continued free from defective mechanism tending to cause accidents, and whenever found unsafe have been promptly repaired or placed out of commission. There have been no accidents or loss of life due to breakage or derangement of machinery, the only fatalities which occurred being due to personal carelessness.

The number of requests for regular quarterly inspections of elevators for the United States Government has increased over the total of last year, so that this portion of our work has developed into quite an item in the total requirements of the office. These inspections are made as a courtesy to the General Government, and add largely to our duties and responsibility.

The regular weekly examination of elevator operators has been continued with gratifying results as regards increase in efficiency and public safety. We are convinced that this is the best means for securing operators of experience, with a sense of their responsibility for public safety in handling this class of public transportation. A recognition of the improvement in service is seen in the acceptance of the District elevator operators' license in lieu of the practical portion of the examinations of the Civil Service Commission for operators in the Government service. The examination of operators interrupts the major portion of 45 days of field work during the year, thus crowding more inspections into the remaining days. There has been no extra compensation, though an allowance for each of the three examining board members has been recommended to Congress.

We take this opportunity to call your attention to the insufficient compensation attached to the office of the inspector of elevators, and urge an increase from $1,200 to $1,500 per annum. The number of elevators to be examined quarterly has increased greatly during the past few years, due to the activity in large building operations, and to extra work for the United States Government. One day of each week has been given up to the examination of operators. The elevator inspectors of other large cities receive from $1,600 to $2,000. The elevator builders and mechanics of this and other cities are paid $4.50 and $5 for an eight-hour day, with special rates and extra pay for overtime; they therefore receive more than the inspector who must be in a position to judge and pass on their work. For the above reasons we feel that the knowledge, diligence, and experience demanded by the duties of this office are not fairly compensated by the old salary assigned to it years ago, and request that an increase to $1,500 per annum be made.

Very respectfully,

E. A. C. HOGE,
WM. I. EVANS,
Inspectors of Elevators.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to submit my report for the fiscal year ended June 30, 1912, covering the duties assigned to me in the district north of Pennsylvania Avenue, east of Tenth Street, and north of Massachusetts Avenue.

Passenger elevators installed	10
Passenger elevators altered	2
Freight elevators installed	26
Elevators inspected quarterly	270
Total inspections	1,346
Total condemnations	1,032
Inspections for United States Government	46
Condemnations on elevators of United States Government	24
Inspections for District of Columbia	4
Condemnations for District of Columbia	10
Miscellaneous inspections, visits, etc	57
Certificates issued	687

Respectfully submitted.

E. A. C. HOGE,
Inspector of Elevators.

The INSPECTOR OF BUILDINGS.

WASHINGTON, *July 1, 1912.*

SIR: I have the honor to herewith submit my annual report for the fiscal year ended June 30, 1912.

Passenger elevators installed	34
Freight elevators installed (power)	31
Freight elevators installed (hand power)	25
Alterations to elevators	2
Alterations to freight elevators	5
Miscellaneous inspections	71
Elevators examined	1,210
Condemnations on elevators	640
Elevators inspected for the United States Government	47
Condemnations on elevators for the United States Government	13
Elevators inspected for the District of Columbia	24
Condemnations on elevators for the District of Columbia	7

Very respectfully,

W. I. EVANS,
Inspector of Elevators.

The INSPECTOR OF BUILDINGS.

REPORT OF THE INSPECTOR OF STEAM BOILERS.

WASHINGTON, *September 1, 1912.*

GENTLEMEN: I have the honor to submit the following report for the fiscal year ending June 30, 1912. Fees received and expenses for same:

Fees still due	6
Boilers inspected	544
Inspections for District of Columbia	70
Boilers condemned as unfit for further use	1
Cases of scale and deposit on tubes and shell plates	18
Cases of internal corrosion	4
Defective stay bolts and braces	2
Setting defective	5
Burned plates	1
Cases of defective tubes	18
Defective steam gauges	20
Serious leaks in seams	3
Dangerous boilers	1

Expenses, labor, etc	$375.00
Premium on bond	10.00
Stationery and stamps	15.00
Printing certificates and billheads	6.25
Total	406.25
Total amount received for 474 boilers	2,370.00
Expenses	406.25
Balance	1,963.75

Very respectfully,

E. F. VERMILLION,
Inspector of Steam Boilers, District of Columbia.

Respectfully submitted through Mr. Morris Hacker, inspector of buildings, District of Columbia.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

REPORT OF THE BOARD OF EXAMINERS OF STEAM ENGINEERS.

WASHINGTON, D. C., *August 28, 1912.*

SIR: We herewith submit to you the report of the board of examiners of steam engineers for the year ending June 30, 1912.

The following table shows the work as it progressed during each month:

	Meetings held.	Applicants.			First class.	Second class.	Third class.	Dinkey class.	Duplicate.
		Received.	Approved.	Incompetent.					
1911.									
July	4	11	5	6	1		2		2
August	4	12	4	8		1	3		
September	5	8	3	5			2		1
October	4	7	4	3			4		
November	4	11	8	3	4		4		
December	5	10	6	4		2	4		
1912.									
January	4	13	6	7	1	1	4		
February	4	14	6	8			6		
March	5	13	3	10			3		
April	4	17	2	15		1			1
May	5	17	4	13			4		
June	4	12	4	8		1	2		1
Total	52	145	55	90	6	6	38		5

In connection with the above we again ask that the board be provided with a suitable card-index system by which the record may be kept. The record of this office is at present kept in a book which was supplied at the expense of the board. This record book is now nearly filled. It is our desire to keep the records of this office in conformance with the system prevailing in all other departments of the District executive offices.

We regret very much the death of one of our members of the board, Mr. Daniel Johnson, for in him we have lost a valuable associate and an efficient examiner.

The vacancy thus caused has been ably filled by the appointment of Mr. James T. Fink.

Our estimate of expenses for the year ending June 30, 1914, has been forwarded to the secretary of the board of commissioners and we respectfully ask that the amount set forth be appropriated.

Respectfully submitted.

E. F. VERMILLION,
H. BOESCH, *Secretary,*
JAS. T. FINK,
Board of Examiners of Steam Engineers.

The INSPECTOR OF BUILDINGS.

REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, *October 7, 1912.*

SIR: I have the honor to submit the thirtieth annual report of the work performed by the division of plumbing inspection for the fiscal year ending June 30, 1912. The following table shows the work performed by the outside forces of assistant inspectors:

Preliminary inspections	7,500
Cast-iron sewers:	
New	5,764
Repairs	1,352
Terra-cotta sewers:	
New	121
Repairs	592
Main sewers tapped	2,109
Rough work in—	
New houses	3,288
Old houses	2,492
Water services	1,021
Notices served	424
Peppermint tests and final inspections	4,279
Work not ready for inspection when ordered	813
Changes ordered in work incorrectly installed	134
Special inspections of municipal work	307
Gas	3,177
Complaints	9,086
Total	42,459

To the above are to be added inspections by the head of the office of a general nature, 481; special inspections on construction work for the District, 954; and by the principal assistant inspector of plumbing, consisting of inspections on complaints relative to illegal plumbing, examination of materials, visits to homes of witnesses, and general police work which does not appear elsewhere, 1,981. The total of these inspections should be added to the above total, which will give a general total of 45,875 inspections made by the entire force. This shows a small decrease of inspections over the previous year.

The following table shows the total inspections made each year since the fiscal year of 1895:

1894–95	5,708	1903–4	25,637
1895–96	8,677	1904–5	27,337
1896–97	14,112	1905–6	30,185
1897–98	17,550	1906–7	32,190
1898–99	17,600	1907–8	29,547
1899–1900	17,405	1908–9	39,404
1900–1901	19,965	1909–10	44,953
1901–2	32,621	1910–11	46,035
1902–3	25,297	1911–12	45,875

The total cost of the new plumbing work installed during the last fiscal year, as stated in the plumbers' requests for permits, amounted to $1,250,000, and it is estimated that there was at least $500,000 in addition to the above expended for repairs, replacements, and remodeling of plumbing.

The number of inspections made by the outdoor force (42,459), divided by the average number of men and the average number of days of service performed by each inspector (assuming an average of 283 days per man), indicates that the average number of inspections made per man per day to be a little over 16. While it is true that many inspections, where a row of houses are inspected at the same visit, do not cover much time, it is also true that in large apartment houses, etc., a single inspection sometimes takes an entire day, and frequently, on complaint cases, as mentioned below, it is necessary to spend from an hour or more to a half day. It can thus be seen that with the large territories covered by some of the districts, where an inspector may have an order for a certain locality and another order a half hour later 2 or 3 miles away, and a third order in the vicinity of the first inspection, which is an everyday occurrence in one or two of the larger districts, the average of over 16 inspections per day per man is very high and indicates that some relief, either an increase in the force or an improvement in the means of transportation, should be provided in justice to the men and in the interests of a good standard of inspection, which can only be obtained when the necessary time is allowed to each job.

CHANGES IN THE REGULATIONS.

There have been a large number of changes in the regulations during the past year, nearly all of which have been for the purpose of either bringing obsolete wording of various clauses up to include present practices or tending to the simplification of plumbing construction work and its consequent lowering of cost to the citizens. Among the latter were the elimination of air chambers on hydrants; eliminating the requirements for tiling or otherwise waterproofing bathrooms in which vitreous water-closet tanks are installed; the elimination of the requirement that a gasoline intercepting tank be placed on the sewer from small garages which may be classed as mere storage sheds; the removal of the prohibition against the running of diagonal sheet-metal rain leaders; and allowing plumbing fixtures to be placed in vaults and other projections beyond the building line under certain restrictions. This last clause is a very great advantage to business buildings, where the cellar space is very valuable, and the reduction of the requirement for a gasoline intercepting trap for automobile storage sheds should save the property owners at least $50 on each such structure erected, and probably 60 per cent of all garages constructed are of the storage-shed variety.

TESTS.

During the last year several series of tests were made on the evaporation of the water seal of traps and the condensation of the moisture in the air on the exterior of the water-closet tanks and other devices, both of which series of experiments showed that the then rigid regulations could be modified, which was done. The little work in the nature of tests which can be carried on without funds therefor has about reached an end, and it is respectfully recommended that if possible some small fund be provided which would enable this office to purchase the necessary materials to carry on the work of experimentation. Any public moneys expended for this purpose would undoubtedly come back to the citizens generally many times over in simplified arrangements or changes which would very probably be the results of such tests.

PER DIEM EMPLOYEES.

The following table shows the per diem employees of this office during the past fiscal year, the number of days employed, and the rates and titles of appropriations:

Name.	Days.	Rate.	Total.
"Public schools, District of Columbia, 1912, repairs to plumbing:"			
F. B. Ridenour	211½	$2.25	$475.88
Wm. Rinehard	269	1.75	470.75
E. C. Hazen	9	2.25	20.25
			966.88
"Health department, District of Columbia, 1912, drainage of lots:"			
F. B. Ridenour	56	2.25	126.00
Total			1,092.88

POLICE COURT CASES.

The total number of warrants obtained was 43, divided as follows:

Violation of plumbing regulations	30
Violation of gas-fitting regulations	1
Violation of plumbing law	5
Violation of gas-fitting law	5
Excavation in public space without permit	1
Employing unlicensed plumber	1
Total	43

These cases were disposed as follows:

Fines aggregating $30 were imposed in	2
Forfeitures aggregating $130	8
Personal bonds to comply with regulations	4
Case dismissed on application of this office	1
Nolle prossed account of compliance with order to do work	19
Pending at close of fiscal year	9
Total	43

In the dismissed case the trustee of record proved to the satisfaction of the court that he was trustee of personal property of the defendant only and could not be held as trustee of real estate, and upon the dismissal of the case on this basis further action was taken and the work was done rather than bring the case to an issue. The number of cases in the police court during the previous fiscal year was 103 and the decrease to 43 is most gratifying, as it indicates that there is a closer compliance with the intent of the regulations and the law under which they are promulgated by the Commissioners. Also that the policy of this office for the last three years in assigning the principal assistant inspector of plumbing to this special police work and the handling of police court cases has had a most salutary effect.

OFFICE WORK.

The following tables give the totals of the office work performed during the past year and comparison with the three previous years:

	1909	1910	1911	1912
Official letters	1,143	980	2,542	2,340
Unofficial letters	4,211	7,204	5,240	4,973
Endorsements	2,761	2,172	2,905	2,204
Reports of inspectors	.....	.....	9,643	9,659
Indexes	.....	.....	1,223	1,404
Plans prepared	34	26	30	33
Specifications prepared	36	30	45	41
Plans and specifications revised	12	4	6	14
Examination plans new buildings	2,860	2,421	2,273	3,256
Examination repair applications	2,225	4,466	2,907	2,263
Postage stamps used:				
2-cent	3,228	3,558	4,300	3,825
1-cent	192	499	2,297	2,345
Postal cards used	.....	919	591	89

Attention is respectfully invited to the constantly increasing number of inspections on complaints, which amount this year to about 20 per cent of the total number of inspections made. These inspections on complaint, however, take a great deal of time and especially those relating to damp walls, water in cellars, etc., where a test is required which often takes as much as half a day of the inspector's time for this single inspection, and it is found that, while the total number of such inspections made is only about one-fifth of the total of the whole number, the time spent in handling cases of this kind is nearly 50 per cent of the entire time of the whole inspection force. A record kept for a short time indicates that less than one-half of the complaints received at the office were complaints of plumbing proper, but cover cases of defective sheet-metal gutters, improper surface drainage, damp cellars, etc. Each one of these complaints, in addition to the several inspections in the field, must be handled from four to five times by the office force and occasion much more than one-half the entire expenditure of time in the office. It is not right that, inasmuch as this office was organized for an inspection bureau, the cases of complaint work, which average only one-fifth of the total inspection work, should actually occupy more than one-half the time, compelling the force frequently to curtail inspections of plumbing work proper, which should be their first duty; and the office is now endeavoring to find some way to weed out inconsequential complaints, many of which are found to be due to disagreements between neighbors or the desire on the part of one to cause trouble at the expense of the other.

COMPULSORY DRAINAGE.

Owing to a simplification of the office method of handling general complaint work no record was kept of the number of compulsory drainage and nuisance cases received during the fiscal year. There were, however, a total of 12 premises provided with sewer and water connection under the act to provide for the drainage of lots, the work being done by the District and, including the incidental expenses in connection therewith, costing $1,605. Two nuisance cases were also handled by the office, at a cost of $35. Both of these amounts have been recommended for assessment in accordance with law. This record of course does not show the great number of cases (probably 50) where work was done by owners after service of notice by this office or where the buildings affected were razed.

PUBLIC CONVENIENCE STATIONS.

The two convenience stations first constructed have now been in operation about five years and the third station for nearly two years. All three stations have been operated up to July 1, 1912, 18 hours per day on both male and female sides, each station employing two male and two female attendants in shifts of nine hours each. During the year the total number of patrons at the station at Seventh Street and Pennsylvania Avenue NW. was 1,138,512; at the station at Thirteen-and-a-half Street and Pennsylvania Avenue NW., 863,994; and at the station at Ninth and K Streets NW., 621,054, making a total number of 2,623,560 persons using them.

The cash receipts from 5-cent pay compartment fees were $1,447.05; $931.15 and $572.20 respectively for the above locations and together with $90 received for the shoe-shining privilege at the station at Seventh Street and Pennsylvania Avenue, gives a total of $3,040.40.

The patronage on the female sides was about 22 per cent of the total and the women contributed 8½ per cent of the total receipts.

The total cost of operation follows: Salaries $7,148.49; general supplies, including cleaning materials, soap, toliet paper, coal and the handling of ashes was $1,781.74; electric current $803.85; laundry $261.24; repairs $423.46, making a total expenditure for the year of $10,418.78. This made the expense for maintenance about $3,500 for each of the three stations for the fiscal year. Comparison with the cost of maintenance of similar stations elsewhere in the country shows these stations are maintained more economically than the average for stations furnishing free supplies to the public, having the same number of employees, and isolated heating and ventilating plants as the District of Columbia stations have.

This office has record of only one station in the country, that is comparable to the District stations, which is operated for a less sum, the yearly cost in that instance being $3,200. All other stations operated at less sum than $3,500 per annum (of which this office has record) obtain their heat and light without cost to them from some adjacent municipal building, and few of them have a ventilating plant of any consequence. The large majority of the stations of which this office has record expend between $4,000 and $5,000 each per annum and in one instance the sum expended is well above $6,000. The general economy of administration can be fairly judged from the fact that the cost of operation per patron for the year amounts to less than 4 mills, not taking into consideration the cash receipts which would have reduced it to about 2¾ mills per patron had these receipts been available for the purchase of supplies, etc., as is usual.

Owing to the reduction in the appropriation from $11,200 to $7,500 for the fiscal year 1913, arrangements have been made to reduce the hours of service at stations at Thirteen-and-one-half Street and Pennsylvania Avenue, and Ninth and K Streets NW., from 18 hours per day in two shifts, to 12 hours per day in one shift, thus reducing the pay roll, which was formerly nearly about $7,200 to about $5,000. It is anticipated that this reduction in the hours of service at the stations and the increasing of the hours of labor for the attendants will not give results entirely satisfactory to the citizens, and this office would recommend that an endeavor be made to have the Congress increase the appropriation to its former amount. During a portion of the last month that the stations were open during a full day of 18 hours, a count was obtained of the number of patrons using the stations during the early hours of the morning and the late evening hours, and it was found that, during many of the hours that the stations are now closed, the patronage exceeded one per minute at each of the stations. On the contrary there are a few hours during the middle of the day that the attendance drops off considerably, but it was not practicable to open the stations early in the morning and close them at noon, reopen them in the late evening and again close them at a late hour, inasmuch as practically the only expense which could be cut sufficiently to bring the maintenance within the sum available was the pay roll, and satisfactory employees could not be obtained who would be willing to work 12 hours per day in two periods of six hours each and separated in such a manner that the entire working day would be 16 hours.

The three stations represent an investment of $70,000 and the year's repairs represent a repair fund of only a little over one-half of 1 per cent.

The great service these stations render to the general public and the great number of patrons are an indication that the District should install other stations of a character and capacity similar to those already in use, at certain of the most congested points in the business district, such as Ninth and F Streets, Fifteenth Street and New York Avenues, Thirty-second and M Streets, and at the Peace Monument. It is also desirable that several smaller stations be erected in such locations where the traffic would justify them, which stations could be more economically operated than the large stations now in use, by having the park attendant, bridge watchman or other employee,

supervise them, and employ only a cleaner to go from station to station. Such stations are almost a necessity at the Aqueduct Bridge, Calvert Street Bridge, Seventh (or Ninth) Street and Florida Avenue NW., Fifteenth and H Streets NE., and several locations in or near Rock Creek Park. Such stations should, however, not be erected at any location which can not be under more or less constant supervision of some responsible person. These stations can frequently be arranged so that heat and ventilation, etc., can be readily obtained from some nearby structure at a reasonable cost. These smaller stations can be constructed probably for $5,000 to $7,000, of plain substantial design, and with fixtures and interiors of such material as to reduce the possibilites of vandalism to a minimum. The larger stations can not be constructed at a less cost than about $20,000 and a station at Fifteenth Street and New York Avenue, on account of certain structural condition would probably cost $25,000 or possibly more.

It is suggested that perhaps rental arrangements could be entered into with large office buildings at the suggested points for occupation of basements not at present in use, and the cost of construction thereby reduced to a much smaller figure than estimated above, renting the necessary heating and ventilation service from the owners of the building. This would also reduce the cost of maintenance considerably, male attendance of a lower grade of intelligence being employed as they would not have expensive mechanical equipment to look after as in the present stations.

The movement for the construction of public convenience stations is general throughout the country, all of the larger cities adding stations from time to time as their need appears. Even many of the smaller cities have one or more stations in their business centers and the tendency is toward an increase in size and cost rather than otherwise.

This office would respectfully recommend that a definite policy of adding one station per year to the present equipment be entered into.

PUBLIC BATHS.

For many years this office has recommended the establishment of public bathhouses in the District of Columbia. Nearly all of the larger cities in this country and practically all of the European cities of any size consider the public bath a necessary article of civic furniture, and wherever they have been built they have proved of such undoubted benefit in the alleviation of slum conditions that others are added from time to time in each city as their need becomes apparent. In certain cities one or more handsome and expensive houses have been built, while in others the policy has been to provide a greater number of smaller and comparatively inexpensive houses favorably situated for the use of the classes for whose special need they are established. Plain substantial buildings suitable for Washington's needs can be built for $40,000 to $50,000 including all equipment and the necessary ground.

This office would recommend that public bathhouses be constructed at as early a date as possible in the most congested centers, such bathhouses to consist of shower-bath arrangements with, if possible, public laundries attached. While it might appear desirable to install swimming pools at certain points for recreation purposes, general public baths should be constructed on the shower-bath principle for space saving and sanitary reasons. They should be open all the year round and so located as to serve the greatest possible number of persons in the various congested districts of the city. It is the belief of this office that the establishment of public bathhouses in this city would be a very great agency for the improvement of slum and alley conditions and that their establishment would be well justified by the increased vigor and intelligence on the part of alley residents and the poorer classes generally, who not only form an important part in the economic life of the city but also the largest proportion of paupers, medicants, free hospital patients, and prisoners. After the buildings are provided and equipped the actual cost of the baths would probably be less than 1 cent each. (Philadelphia rate is about one-quarter of a cent per bath.)

Pending the appropriation for the construction of a municipal bathhouse, I beg to invite attention to the fact that several of our public schools are equipped with more or less complete shower-bath arrangements, and it might be possible that some arrangements can be made whereby these appliances can be made available to the citizens after school hours at comparatively little cost, which service will unquestionably indicate the direct need for complete structures with the usual public-bath equipment.

PUBLIC-SCHOOL BATHS.

This office reiterates the recommendation of the past several years that proficiency in the art of swimming be made a requirement in the public-school course. What might be called an innovation in this country is quite matter of fact in many cities in England and on the continent of Europe and has been included in the course of

one of our colleges and is now being considered by the school authorities of our larger cities. After the construction of the necessary pools at central points for both the colored and white pupils the cost of maintenance would be very small—only the necessary teachers' salaries. One-half hour a week during one school term would be more than sufficient to fit the average child to not only protect itself in the water but to save others if need be.

Prof. Sanford, of Brookline High School, Boston, said: "As soon as the baths were completed, I made provision on my program to have swimming during school hours Wednesdays and Fridays. Squads were sent before and after recess. Within two months nearly every boy knew how to swim. Provision was made for the girls in the afternoon, and in a surprisingly short time the girls were good swimmers." This means that these boys and girls were in a very short time not only equipped to protect themselves in the water in emergencies but to save the lives of others if need arose. It is also needless to add that swimming properly taught has a very distinct value as a moderate athletic exercise, bringing as it does practically every muscle of the body into play.

Young men and women educated by and at the expense of the District should be saved to become a business asset of the city, but many of them come to an untimely end because of the lack of knowledge as to the proper care of themselves in the water, which knowledge could be imparted by the District at a very small cost per pupil, and the District suffers an economic loss by reason of the failure of the educational investment to bear fruit.

In conclusion, I beg to bring to your attention the conscientious work of the field and office force, without whose fidelity to duty this office could not maintain the known high standard of its inspection work and to request that every effort be made to have the Congress raise their salaries to a level commensurate with their work.

Respectfully submitted.

A. R. McGonegal,
Inspector of Plumbing, District of Columbia.

The Inspector of Buildings.

REPORT OF THE PLUMBING BOARD.

Sir: I have the honor to submit the following report of the work of the plumbing board for the fiscal year ending June 30, 1912:

During the year the board held 25 sessions for the examination of candidates for licensing as master plumbers and gas fitters; the total number of examinations held is 44. The number of original candidates examined for licensing as master plumbers and gas fitters is 24, of whom 9 passed and 15 failed. The number of those reexamined is 20, of whom 7 passed and 13 failed. Included in the foregoing statement one candidate for licensing as master gas fitter passed the required examination and one failed.

Mr. P. C. Schaefer, whose term as a member of the board expired June 30, 1911, was reappointed as a member for two years.

Mr. James S. O'Hagan was appointed as a member of the board for two years, commencing July 1, 1911, vice Patrick J. Brick, whose term had expired June 30, 1911.

Very respectfully,

Peter C. Schaefer,
President.

Richard A. O'Brien,
Secretary.

Maj. E. M. Markham,
Corps of Engineers, U. S. Army.
Assistant to Engineer Commissioner, District of Columbia.

REPORT OF THE MUNICIPAL ARCHITECT.

Washington, D. C., *August 22, 1912.*

Sir: I have the honor to forward herewith the annual report of the operations of the office of municipal architect for the fiscal year ending June 30, 1912.

During the year 28 buildings and additions were under construction, as follows:

Building.	Appropriation available.	Cost.	Condition of work.
Chemical Engine House No. 2, Pennsylvania Avenue SE.[1]	July 1, 1909	$20,405.00	Completed Aug. 15, 1911.
Grading		61.50	
McKinley Manual Training School, No. 130, third extension, Rhode Island Avenue and Seventh Street NW	May 18, 1910	154,700.00	Completed Sept. 14, 1911.
Fencing		136.00	
Playground shelter, Rosedale, Eighteenth and Gales Streets NE	July 1, 1910	3,677.00	Completed July 20, 1911.
Playground shelter, Georgetown, Thirty-fourth Street and Volta Place NW	do	3,677.00	Do.
Joseph Rodman West School, No. 163, Farragut Street, between Thirteenth and Fourteenth Streets NW	May 18, 1910	59,052.00	Completed Nov. 16, 1911.
Grounds and grading		1,408.75	
Wisconsin Avenue Manual Training School, No. 164, Wisconsin Avenue and Thirty-third Street NW	May 18, 1910	30,049.00	Completed Sept. 21, 1911.
Fencing		205.00	
Grover Cleveland School, No. 165, Eighth and T Streets NW	May 18, 1910; Mar. 2, 1911	92,500.00	Completed Sept. 18, 1911.
Grading		1,275.00	
Randle Highlands School, No. 166, Thirtieth and R Streets SE.[2]	May 18, 1910	58,988.00	Completed May 22, 1912.
Grading		1,543.80	
Do		498.00	
Central heating plant, M Street High, Douglass and Simmons Schools	May 18, 1910	28,804.00	Completed Sept. 21, 1911.
Armstrong Manual Training School addition, P Street, between First and Third Streets NW	do	59,138.00	Completed Feb. 17, 1912.
Switchboard and wiring		439.00	
Steam connections to electric generator		325.00	
Alexander Crummell School, No. 167, Gallaudet Street, opposite Central Avenue, Ivy City	May 18, 1910	44,130.00	Completed Oct. 11, 1911.
Grading		260.00	
Do		138.00	
Cardozo Manual Training School, No. 168 First and I Streets SW	May 18, 1910	32,121.00	Completed Dec. 8, 1911.
Grading, etc		1,290.00	
Engine House No. 24, Georgia Avenue NW	May 18, 1910; July 1, 1910	22,250.00	Completed Sept. 10, 1911.
Electrical work		375.00	
Takoma Branch Library, Fifth and Cedar Streets, Takoma Park, D. C.	July 1, 1910	34,000.00	Completed Sept. 9, 1911.
Western High School addition, No. 117, Thirty-fifth and R Streets NW	June 25, 1910	31,251.00	Completed Oct. 25, 1911.
Mortuary building at Tuberculosis Hospital	July 1, 1910	4,390.00	Completed Aug. 15, 1911.
Garage and lodge, at Fort Reno	do	8,633.00	Completed July 13, 1911.
Addition to District cement warehouse, Fourteenth and D Streets SW	do	8,282.00	Completed Aug. 1, 1911.
Stable building for street-cleaning department, G and Thirteenth Streets SE	Mar. 2, 1911	61,476.00	Completed Feb. 5, 1912.
Burrville School, No. 170, Division Avenue and Hayes Street NE	do	31,000.00	Completed June 20, 1912.
Military Road School, No. 171, Military Road, between Thirteenth and Fourteenth Streets, extended, NW	do	29,000.00	Do.
Police precinct stations, Nos. 1, 4, 6, and 8, making alterations and installing new cells	July 1, 1911	16,099.00	Completed May 15, 1912.
Addition to Engine House No. 20, Wisconsin Avenue, Fortieth and Warren Streets NW	do	5,350.00	Completed Mar. 15, 1912.
James Ormond Wilson Normal School, No. 162, Eleventh and Harvard Streets NW	Mar. 2, 1911	220,617.00	Will be completed Oct. 22, 1912.
Heating work		21,810.00	
Electric work		2,975.00	
Manual Training School, No. 172, twelfth division, O Street NW., between North Capitol and First Streets	Mar. 2, 1911	39,961.00	Will be completed Sept. 18, 1912.

Rebuilding stable for street cleaning department, Ninth, Tenth, N and O Streets NW	do	41,000.00	To be completed Nov. 1, 1912.
Pound and stable building for health department, South Capitol Street, between H and I Streets SW	do	9,544.00	To be completed Sept. 10, 1912.
Northwest wing, Western High School, No. 117, Thirty-fifth and R Streets NW	June 26, 1910	8,000.00	Completed Feb. 21, 1912.

[1] Site donated Mar. 28, 1910.

[2] Site donated June 8, 1911.

The plans for Normal School No. 169 (colored), for which an appropriation was made March 2, 1911, were started on March 11 and completed November 11, 1911. A second set of plans was started in January, 1912, and will be completed September 15, 1912.

The plans for the colored men's ward, Home for the Aged, at Blue Plains, D. C., for which an appropriation was made July 1, 1911, were started February 15 and completed July 18, 1911. Estimates ran beyond the amount available, and an additional appropriation was made June 26, 1912, and plans were returned to the architect for revision. They should be completed September 26, 1912.

BUILDINGS COMPLETED.

During the past fiscal year the following buildings were completed:

Chemical Engine House No. 2, Pennsylvania Avenue SE.

McKinley Manual Training School, No. 130, third extension, Rhode Island Avenue and Seventh Street NW.

Playground shelter, Rosedale, Eighteenth and Gales Streets NE.

Playground shelter, Georgetown, Thirty-fourth Street and Volta Place NW.

Joseph Rodman West School, No. 163, Farragut Street, between Thirteenth and Fourteenth Streets NW.

Wisconsin Avenue Manual Training School, No. 164, Wisconsin Avenue and Thirty-third Street NW.

Grover Cleveland School, No. 165, Eighth and T Streets NW.

Randle Highlands School, No. 166, Thirtieth and R Streets SE.

Central heating plant for M Street High, Douglass, and Simmons Schools.

Armstrong Manual Training School addition, P Street, between First and Third Streets NW.

Alexander Crummell School, No. 167, Gallaudet Street, opposite Central Avenue Ivy City.

Cardozo Manual Training School, No. 168, First and I Streets SW.

Engine House No. 24, Georgia Avenue NW.

Takoma Park Branch Library, Fifth and Cedar Streets, Takoma Park, D. C.

Western High School addition, No. 117, Thirty-fifth and R Streets NW.

Mortuary building at Tuberculosis Hospital.

Garage and lodge at Fort Reno.

Addition to District cement warehouse, Fourteenth and D Streets SW.

Burrville School, No. 170, Division Avenue and Hayes Street NE.

Military Road School, No. 171, Military Road, between Thirteenth and Fourteenth Streets extended NW.

Alterations and cell work in Police Stations 1, 4, 6, and 8.

Addition to Engine House No. 20, Wisconsin Avenue, Fortieth, and Warren Streets NW.

Northwest wing, Western High School, Thirty-fifth and R Streets NW.

MINOR REPAIRS AND IMPROVEMENTS.

Besides the work on the new buildings and additions, minor repairs and improvements were made on 65 other buildings, as shown by the following list:

Building.	Work.	Date of advertisement.
Armstrong School	Steam engine and electric generator	Sept. 9, 1911
James Ormond Wilson Normal School	Electric lighting system	Oct. 14, 1911
Georgetown shelter house	Heating and gas fixtures	Nov. 25, 1911
Rosedale shelter house	do	Do.
James Ormond Wilson Normal School	Heating, ventilating, and electric generating systems.	Dec. 4, 1911
Manual Training School, No. 172	Conduits and wires for electric lights and telephone systems.	Feb. 6, 1912
Armstrong Manual Training School	Steam connections to new electric generators	Mar. —, 1912
Do	Switchboard apparatus and wiring new electric generator.	Do.
Do	Gas and electric fixtures	May 20, 1912
Police court	Motor and fan	May 28, 1912
Columbia Hospital	Changing heating and power systems	May 17, 1912
Dent School	Multivane fans and vento heaters	June 13, 1912
Henry School	Retubing north boiler	July 7, 1911
Stevens School	Retubing south boiler	Do.
Gales School	Retubing 2 boilers	Do.
Garnet School	Replacing 2 boiler tubes	Do.
Truck House No. 2	Installing tracks	July 10, 1911
Wisconsin Avenue Manual Training School.	Stock cases, cabinets, etc	July 13, 1911

Building.	Work.	Date of advertisement.
Public Library	Retubing boiler	July 19, 1911
Eastern High School	Replacing 2 boilers	July 12, 1911
Building at 1609 Seventh Street	Razing and removing, and cement plastering adjacent wall.	July 20, 1911
Brookland School	Retubing boiler	July 25, 1911
Cranch School	Retubing 2 boilers	July 27, 1911
Hyde School	Slate treads to replace wooden	July 31, 1911
Alex. Crummell School	Hauling 1 portable building	Aug. 11, 1911
Grant School	Constructing vault and resetting steps	Aug. 14, 1911
Dent School	Entrance stairs	Aug. 16, 1911
Edmonds School	Erecting iron gate	Do.
Burrville School	Moving old building	Do.
Military Road School	do	Do.
Almshouse, District of Columbia	Reenforcing metal stack	Aug. 18, 1911
Do	Retubing 2 boilers	Do.
Chemical Engine No. 2	Constructing concrete driveway	Aug. 28, 1911
Cement warehouse	Sewer and down spouts	Sept. 1, 1911
Georgetown and Rosedale shelter houses.	Shower curtains and poles	Sept. 15, 1911
McKinley Manual Training School	Iron and wire fences	Sept. 18, 1911
Police Station No. 11	Lamp	Sept. 20, 1911
Wisconsin Avenue Manual Training School.	Grading	Oct. 12, 1911
Cardozo Manual Training School	Walks, fence, soiling, and sodding	Do.
Mortuary building, Tuberculosis Hospital.	Radiator and terrace steps	Do.
Randle Highlands School	Grading	Oct. 18, 1911
District of Columbia jail	Retubing 3 boilers	Oct. 19, 1911
Grover Cleveland School	Walks, coping, retaining wall, fence, soiling, and sodding.	Oct. 25, 1911
Public Library	Repair of elevator	Oct. 31, 1911
Alex. Crummell School	Grading, cinder finish, etc	Nov. 6, 1911
Joseph Rodman West School	Grading, soiling, sodding, wire fence, and spreading broken stone.	Do.
Alex. Crummel School	Metal book closets	Nov. 7, 1911
Do	Hauling portable to Deanwood	Nov. 8, 1911
Joseph Rodman West School	Cellar drainer	Dec. 18, 1911
Grover Cleveland School	Lettering building	Dec. 21, 1911
Street-cleaning department stable SE	Installing feed boxes	Jan. 20, 1912
Grant School	Metal ceiling and border	Feb. 9, 1912
McKinley Manual Training School	Spiral stairways	Mar. 4, 1912
Western High School	Erection iron fence	Mar. 16, 1912
Grover Cleveland School	Installing interior steps	Apr. 5, 1912
Engine House No. 20	Driveway	Apr. 18, 1912
Armstrong Manual Training School	Additional windows and grilles	Apr. 26, 1912
Harbor master's office and wharf	New piles	May 7, 1912
Armstrong Manual Training School	Additional windows and grilles	May 20, 1912
Western High School	Remodeling boys' toilet and chemical laboratory waste lines.	June 11, 1912
Dent School	2 steam boilers	Do.
Takoma Park Library	Lamp-post and bracket	June 12, 1912
Central heating plant	Installing soot-blower system	June 17, 1912

WORKHOUSE AT OCCOQUAN.

On August 1, 1911, practically all construction work, with the exception of a few outhouses, a barn, and some small structures, was completed. At the request or suggestion of the superintendent of the workhouse the inspector representing this office was withdrawn and the work turned over to the superintendent of the workhouse.

TIME CONSUMED IN PREPARATION OF PLANS.

The foregoing schedules show 88 pieces of construction for which plans and specifications were prepared in this office.

The preparation of plans for Government work and the execution of contracts for such work necessarily consumes more time than for private work, for the reason that the plans for such buildings must be submitted to the Government officials who will be in charge of such buildings after their completion.

The plans pass through the hands of at least a half dozen officials, and it sometimes takes a month to perfect the contract with its bonds and other legal requirements. Considerable time is lost in printing proposals and advertisement, which is not necessary in private work. About a month more is required for this.

The following table will show the length of time intervening between the dates of the availability of the last appropriation and the dates of the completion of the buildings:

Name and number of building.	Date of appropriation available.	Plans started and finished.	Work started and finished.	Number of months from availability of last appropriation to completion of building.
McKinley, No. 130, third addition	May 18, 1910	Nov. 27, 1909 June 1, 1910 Sept. 17, 1910	Dec. 12, 1910 Sept. 14, 1911	15½
J. R. West, No. 163	do	June 23, 1910 Sept. 15, 1910	Mar. 4, 1911 Nov. 16, 1911	18
Randle Highlands, No. 166	May 22, 1910[1]	May 22, 1911 June 2, 1911	July 5, 1911 May 22, 1912	12
Armstrong Manual Training, addition	May 18, 1910	Oct. 3, 1910 May 25, 1911 June 10, 1911	July 26, 1911 Feb. 17, 1912	21
Alexander Crummell, No. 167	do	Sept. 16, 1910 Nov. 11, 1910	Mar. 14, 1911 Oct. 11, 1911	16½
Cardozo Manual Training, No. 168	do	Oct. 3, 1910 Feb. 15, 1911 Feb. 23, 1911	May 1, 1911 Dec. 8, 1911	19½
Western High, No. 117, addition	June 25, 1910	July 5, 1910 do	Mar. 12, 1911 Oct. 25, 1911	16
Burrville, No. 170	Mar. 2, 1911	Aug. 18, 1911 Aug. 29, 1911	Oct. 23, 1911 June 20, 1912	15½
Military Road, No. 171	do	Aug. 18, 1911 Aug. 29, 1911	Oct. 23, 1911 June 20, 1911	15½
J. O. Wilson Normal, No. 162	May 18, 1910 Mar. 2, 1911	Nov. 18, 1910 Apr. 8, 1911	July 5, 1911 Oct. 22, 1912	19½
Manual training, twelfth division, No. 172	do	Oct. 30, 1911 Dec. 30, 1911	Mar. 16, 1912 Sept. 18, 1912	18
Street cleaning stable, SE	do	June 19, 1911 do	Oct. 17, 1911 Feb. 5, 1912	11

[1] Site selected May 20, 1911.

For the 12 buildings above enumerated, the average time was 16.5 months. This shows a marked improvement over former conditions, and I do not believe that any similar office in the United States can show more expedition, and with the improvements made in the organization of this office, now in its fourth year, I expect to have plans completed so that the work may start immediately after the passage of the appropriations.

TIME CONSUMED IN MAKING REPAIRS.

I regret to say that, on account of the delay in passing the appropriation bill, repairs on the school buildings and other District buildings could not be started until the 1st of July. Last year and the year before the appropriations were made immediately available, and as a result much valuable time was saved by beginning the repairs immediately after the schools closed, about the 20th of June. This year it was impossible to tell, until the 26th of June, what funds would be available, and after that date materials had to be ordered. As a consequence the repairs will not be fully completed by the time the schools open in September. The superintendent of repairs reports that materials ordered about the 1st of July had not been received at a date six weeks later. This appears to be an unreasonable delay and will no doubt result in criticism if repairs are behind hand this fall. It seems to me that this matter is of enough importance to call for the adoption of some means for obtaining these materials within a reasonable time, as the delays affect the whole organization of the repair shop. Mechanics are employed on the assumption that materials will be delivered in time for the work, and the janitors and caretakers in the school buildings can not complete their annual house cleaning until the repairs are completed, so that the whole system is upset by the delay in the delivery of materials.

Last year, in my annual report, I attempted to give some idea of the scope and magnitude of the work. We now have about 160 school buildings and 100 other District buildings to keep in repair. Last winter was one of the most trying winters we have had in 30 years, and the stress on the heating apparatus and plumbing in these buildings was unusually severe.

The report of the superintendent of repairs, included in this report, will show in detail the amounts expended on each and every building owned by the District, with the charges subdivided for the several branches of the work, so that it will be

possible to tell the exact amounts expended on each building, as well as the aggregate amount on all buildings.

The system of stock account for the receipt and distribution of materials for repairs has been in use at the repair shop for several years. I have consulted the auditor, for advice and suggestions for improvement in the method of keeping track of materials and supplies, and have also invited suggestions from the chief of division in the Auditor's Office of the Treasury. They both agree that the system is as good as they have seen in any similar establishment, and that it is a safe check on the distribution of materials and supplies. This system is managed and the account kept up from day to day by a clerk and one assistant, who also acts as shipping clerk. An economical method is pursued at the repair shop for keeping check on the time of laborers and mechanics, and in order to avoid the expense of numerous foremen, the mechanics are furnished with post cards, with blank forms printed thereon showing the time of arrival at the building and the time of leaving. Also the time consumed in traveling from one building to another, or to the shop. These post cards are countersigned or certified by the principals or janitors of the schools, by the captains or clerks at the police stations and fire-engine houses and by the officials in charge at other District buildings. In this way the very small corps of foremen or bosses is enabled to travel from building to building to direct the work and see that the men are industriously employed. At the present time there are only six of these boss mechanics or foremen, and at times they have nearly 300 men to supervise. The mechanics employed at the repair shop are men of the best reputations in their respective branches, and it has been my experience, and that of the superintendent of repairs, that they render a full day's work. Any mechanic found loafing on his work is promptly discharged.

I believe it would be in the interest of economy to employ several additional bosses or foremen to exert supervision over the work of the mechanics, as it is impossible for the superintendent of repairs to visit more than 15 or 20 buildings a day, and at times repairs are in progress simultaneously on over a hundred buildings.

COMPARISON IN COST OF REPAIRS WITH OTHER CITIES.

By taking data furnished by the Bureau of Education, we find that Washington is next to the lowest in cost of repairs to school buildings of 12 cities named, and the ratio of cost of repairs to the total maintenance cost of the schools is shown by the following table:

City.	Ratio of cost of repairs to total maintenance cost.
Chicago, Ill	One twelfth.
New Orleans, La	Do.
Milwaukee, Wis	One thirteenth.
Baltimore, Md	Do.
Buffalo, N. Y	One seventeenth.
Newark, N. J	One nineteenth.
Cleveland, Ohio	Do.
Los Angeles, Cal	One twenty-third.
San Francisco, Cal	One twenty-fourth.
St. Louis, Mo	One twenty-sixth.
Washington, D. C	One twenty-seventh.
Detroit, Mich	One thirty-sixth.

Washington spends but one twenty-seventh of the total cost of the schools in repairs.

I have prepared a table showing the cost of repairs on school buildings, on the per pupil basis, and find that the cost of repairs in this city, on this basis, is the same as St. Louis, and less than the other cities of the country of about the same size and conditions, with the exception of Cleveland, Ohio.

The municipal architect, during the time he has been employed by the District, has constructed over 70 school buildings. For the past four years the school buildings have been constructed of fireproof material up to the roof. I have communicated with the schoolhouse architects in other cities and find that our buildings cost less than buildings of the same class in other cities. Quite a number of architects in practice have been communicated with, and I find that our District buildings cost less per cubic foot than similar buildings constructed for private owners. The buildings constructed during the last year, including all buildings erected for the District, averaged but 15.74 cents per cubic foot, while the school buildings of St. Louis and Boston, which are the nearest to ours in a comparison of materials of construction, averaged 19 and 23 cents per cubic foot, respectively.

The table following shows the cost per cubic foot of the District buildings.

TABLE SHOWING CUBIC COST OF BUILDINGS.

Last year in the annual report the cubic cost of District buildings was given from the year 1897 to the year 1911, inclusive. The cost of the buildings erected during the past fiscal year and those now under construction, all of which were designed by the municipal architect, is as follows:

Building: Name, number, description, and location.	Cost.	Cubic contents.	Cost per cubic foot.	Heating plan.	Architect.
			Cents.		
James Ormond Wilson Normal School, No. 162, Eleventh and Harvard Streets, NW.	[1] $245,402	1,403,048	17.49	Direct and indirect.	Municipal architect.
Manual Training School, No. 172, twelfth division, O Street, NW., between North Capitol and First Streets.	[2] 39,961	253,015	15.79	Direct and direct indirect.	Do.
Reconstruction of stable for street cleaning department, Ninth, Tenth, N, and O Streets, NW.	41,000	431,920	9.49	Steam direct.....	Do.
Pound and stable building for health department, South Capitol Street, between H and I Streets.	9,544	104,922	9.10	Stoves.....	Do.
Northwest wing Western High School, No. 117, Thirty-fifth and R Streets, NW.	7,351	41,328	17.79	Direct.....	Do.
Stable building for street cleaning department, G and Thirteenth Streets SE.	61,476	524,249	11.73	Stoves.....	Do.
Burrville School, No. 170, Division Avenue and Hayes Street, NE.	31,000	152,104	20.38	Direct and gravity indirect.	Do.
Military Road School, No. 171, Military Road, between Thirteenth and Fourteenth Streets, extended, NW.	29,000	157,457	18.42	.....do.....	Do.
Addition to engine house No. 20, Wisconsin Avenue, Fortieth, and Warren Streets NW.	5,350	24,933	21.50	None.....	Do.

[1] Including heating and electric work.
[2] Including electric work.

PLANS PREPARED IN OFFICE OF THE MUNICIPAL ARCHITECT.

It will also be noticed that the plans for all the buildings enumerated in the foregoing table were prepared in the office of the municipal architect.

It was necessary, while the office of the municipal architect was combined with that of the inspector of buildings, to employ the assistance of outside architects in order to complete the plans within a reasonable time, and these architects were selected by a vote of the members of the local association of architects, but the work of the office has been brought up to date, and for the past two years most of the plans have been prepared in this office, and last year all but one building were designed by the municipal architect.

With a view to economy the work has been standardized as much as possible, but this is a question that requires very careful consideration for several reasons. In fireproof buildings the methods of construction are constantly changing and improving. The standard set by the building regulations of this and other cities yearly becomes more exacting. The materials of construction and so-called fireproofing systems are undergoing numerous changes, and plans which would have sufficed a year ago are now out of date. Some of our earlier school buildings provided for 56 pupils to a room, while the modern requirements place the limit at 42 pupils. An attempt was made last year to use the same plans at two different locations, but the difference in grades, environments, exposure, and accessibility from streets and alleys was so great that it was found necessary to redraw the plans. The limit of standardization seems to be confined to the interior fittings and equipment. One of the greatest benefits to be derived from standardization would be the adoption of an approved type of plumbing, heating, and ventilation apparatus, so that in case of breakage, in any of these branches of the work, parts would be interchangeable, and a stock of such materials or appliances

could be kept on hand for emergency repairs. But the legal requirements, compelling competition, prohibit this arrangement and afford the Government officials little or no discretion in the selection of apparatus of this kind, being confined to the acceptance of the lowest responsible bid to a great extent. An effort was made about four years ago to adopt a type of architecture most suitable for schoolhouse work and another type suitable for engine houses. This step was taken with a view to standardize the size of windows and door openings, but recently the Commission of Fine Arts has recommended changes in the type or style of architecture. This again interferes with the idea of standardization, but notwithstanding these difficulties the theory will be put into practice as much as possible, reserving the right to make improvements on previous plans and changes in the method of construction or in the materials used where experience indicates that improvements or changes should be made.

EXPENSES OF ADMINISTRATION.

The office has been in operation for three years, and since its organization in July, 1909, but three additional men have been employed on the annual roll, viz: One, as heating, ventilating, and sanitary engineer, one as superintendent of construction, and one as draftsman. During the fiscal year 1910 the cost of the buildings under construction, as shown by the annual report, amounted to $920,714. In the fiscal year 1911 the buildings under construction cost $917,890. For the fiscal year 1912 buildings under construction cost $1,190,834, but as the period of construction on four of these buildings will extend into the fiscal year 1913, the following deduction is made from the total cost for the year 1912, viz: Normal School No. 162, three months in 1913, or one-fourth deduction in cost ($61,350); the pound, two months, or one-sixth off ($1,590); School No. 172, three months, or one-fourth off ($9,990), and the street-cleaning stable northwest, will run into 1913 four months, or one-third off ($13,667), leaving the cost of buildings for the year 1912 $1,104,237, making the yearly average cost of buildings for the three years $980,947, which is exclusive of minor improvements and cost of repairs.

YEARLY EXPENSE; PERSONAL SERVICES.

Draftsmen, inspectors, and copyists (on per diem basis) on pay roll of office	$17,607.75
Annual pay roll of office	12,000.00
	29,607.75
Commission to architects	4,362.94
Total	33,970.69
Costs of inspection, copyists, etc., on the basis of the yearly average cost of new buildings and additions, for the three years mentioned..per cent..	1.79
Cost of inspection, copyists, etc., and including the annual pay roll, for draftsmen and all other salaries of office, on the same basis..per cent..	3.02
Percentage of entire cost, including inspection, copyists, draftsmen, annual pay roll and commissions to architects, on average yearly cost of all buildings.....per cent..	3.463

The regular fees to private architects, on the basis of annual cost of buildings, would amount to $58,856.82. The office is therefore run on an economical basis and saves, per year, $24,886.13.

The question has been raised whether it is worth the difference saved by designing all buildings in this office. It is undoubtedly true that a certain sameness will prevail unless an occasional commission is given to an outside architect. On the other hand, the Commission of Fine Arts has suggested uniformity in general design or style of buildings, and has recommended the colonial type for all buildings.

BUILDINGS DESIGNED IN OFFICE.

In the list of 28 buildings, first given in this report, 20 were designed in this office and 8 were given out to architects. The proportion of buildings given out has decreased yearly since the organization of the office in 1909, and next year it is proposed to give out only one building.

IMPROVEMENT IN BUILDINGS AND REPAIRS.

The improvement in our municipal buildings and the economical expenditure of the appropriations have been commented upon in the report of the engineer department for the year ending June 30, 1911, and the improvement in heating, ventilation, the general design and construction of such buildings has been referred to in public documents and official reports of the board of education and the chamber of commerce.

The results obtained by improved methods of repairing the buildings have also been favorably spoken of, as shown by testimony before the District Committee of the House of Representatives in hearings of July 26, 1912.

REPORT OF THE SUPERINTENDENT OF REPAIRS.

I have the honor to forward herewith the report of the superintendent of repairs for the year ending June 30, 1912, and respectfully invite attention to the economical administration of his division, as indicated in other parts of this report.

Most respectfully submitted.

SNOWDEN ASHFORD,
Municipal Architect, District of Columbia.

Maj. E. M. MARKHAM,
Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner, District of Columbia.

REPORT OF THE SUPERINTENDENT OF REPAIRS.

SIR: I have the honor to forward herewith my annual report of the work done by this office during the fiscal year ending June 30, 1912.

The appropriation of $70,000 for repairs and improvements to school buildings and grounds, heating apparatus, etc., was not sufficient to make repairs necessary to properly preserve the school buildings. Every effort has been made to make repairs to the buildings where most needed to keep them from deteriorating.

The demands for repairs are constantly growing as the number of buildings increases, yet the amount appropriated for their repair is practically the same each year. This condition is responsible for the serious problem that confronts this office as to the expenditure of the funds satisfactorily to all concerned.

During the past year about 15 per cent of the appropriation for repairs to school buildings was spent on heating apparatus alone. During the coming fiscal year it will be necessary to use a much larger amount to replace broken and worn-out parts of furnaces, etc. In addition to this, several of the larger heating plants must be completely renovated and some of the older ones will have to be replaced. To do this would require an expenditure of approximately 20 per cent of the total repair fund. It can be readily seen that this greatly depletes the funds out of which much other very important work must be paid for.

If the present appropriation of $85,000 for repairs and improvements to school buildings and grounds, for repairing and renewing heating and ventilating apparatus, and repairs to plumbing, etc., was available for use for repairs and improvements to buildings and grounds, etc., and an additional amount be appropriated sufficient to care for the heating plants, much better results in all directions could be obtained. Some of the plants now in use have already deteriorated so much from age and are in need of such constant and thorough repairs that, in my opinion, it would be considerably cheaper if they were replaced, yet this is an impossibility owing to the fact that the appropriations are already entirely too small to meet the demands.

For this reason I earnestly recommend that Congress be importuned to make an appropriation to care for this very important item.

Appropriations aggregating $185,000 have been made by Congress for the purpose of providing fire protection to school buildings. This amount has been expended in replacing wooden stairways in brick buildings with those of fireproof construction, the removal of old and unsuitable fire ladders and fire escapes, improving exits, fireproofing heating apparatus, alterations to heat and vent flues, fireproofing corridors, construction of fireproof storage for fuel and ashes, and the purchase and erection of fire extinguishers and fire alarms. At present practically all of the work of this character has been accomplished, the exception being the fireproofing of the second-floor corridors in several of the schools, and I consider the school buildings of this city in a safe condition if properly used and cared for.

In my estimates for 1914 I am again requesting that the amounts of the several appropriations under my charge be increased. The number of buildings, repairs, and

improvements which I am called upon to care for are constantly growing, and it is utterly impossible to perform this additional work year after year for practically the same amount. The additional small sums granted by Congress in the past have been entirely inadequate to render the services demanded.

It should be remembered that there is, on present estimated values, about $11,000,000 invested in school buildings, grounds, and equipments, and, allowing 1 per cent for repairs, would equal $110,000 per year.

I would respectfully invite your attention to my report of last year wherein is shown the percentage of rentals allowed by private corporations for the repair and upkeep of their property. It is well known that school buildings are subjected to hard use and should therefore be allowed a greater amount for repairs than private buildings.

I would also invite your attention to the floor area, breakage of glass, and resurfacing of blackboards, in my last year's report. These items draw heavily upon the appropriation and are of such a nature as to make their repair imperative.

In accordance with recommendations of the health officer, sanitary drinking fountains are being installed as rapidly as possible, the old drinking cup having been pronounced insanitary, and is, theoretically, dangerous.

I would respectfully renew my recommendation of last year that Congress be asked to make all appropriations used by this office, especially those for repairs to school buildings, immediately available. This will enable me to commence the repair work on school buildings the day following the closing of school.

The majority of the repairs are to the interior of the classrooms, such as the repair of windows, floors, etc., and when the appropriations become available July 1 it is practically impossible to purchase material and have it delivered to the buildings and secure a sufficient force of mechanics to complete the work before the opening of the fall session of school. This condition also refers to the heating apparatus which are required to be in operation by the opening of school, as it is difficult to work on these plants during school hours. By this arrangement, also, the foremen can be in closer touch with their men and secure a better class of work economically.

During the year fire occurred in the following buildings, and the damage repaired at a cost as follows: December 27, 1911, Wallach School, $41.22; January 11, 1912, Brightwood School, $1,557.41.

Following is a detailed statement of the work done under my supervision.

Respectfully,

HENRY STOREY,
Superintendent of Repairs, District of Columbia.

The MUNICIPAL ARCHITECT.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.

[Appropriation, $70,000.]

Class of work.	Labor.	Material.	Contract.	Total.
Abbott School, No. 27:				
Carpentering	$43.26	$4.68	.....	$47.94
Painting	1.50	.20	.....	1.70
Tinning	41.50	26.25	.....	67.75
Heating	.....	.....	$14.88	14.88
Steam fitting	6.19	.30	.....	6.49
Material drawn by janitor	.....	1.74	.....	1.74
Total	92.45	33.17	14.88	140.50
Adams School, No. 65:				
Carpentering	9.50	3.97	.....	13.47
Painting	3.22	2.31	.....	5.53
Tinning	40.56	7.91	.....	48.47
Heating	13.00	3.00	54.13	70.13
Material drawn by janitor	.....	4.36	.....	4.36
Total	66.28	21.55	54.13	141.96
Addison School, No. 53:				
Carpentering	77.57	10.08	.....	87.65
Painting	13.18	5.25	.....	18.43
Heating	.....	.....	37.74	37.74
Material drawn by janitor	.....	1.69	.....	1.69
Total	90.75	17.02	37.74	145.51

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Ambush School, No. 79:				
Carpentering	$60.51	[1]$276.63	.....	$337.14
Painting	4.22	2.65	.....	6.87
Tinning	25.44	2.50	.....	27.94
Heating	.....	.....	$131.75	131.75
Material drawn by janitor	.....	2.20	.....	2.20
Total	90.17	283.98	131.75	505.90
Amidon School, No. 48:				
Carpentering	37.50	22.69	.....	60.19
Painting	.56	.44	.....	1.00
Tinning	47.70	8.20	.....	55.90
Heating	2.00	2.54	8.60	13.14
Gas engine	48.57	13.47	.....	62.04
Material drawn by janitor	.....	1.10	.....	1.10
Total	136.33	48.44	8.60	193.37
Armstrong School, No. 129:				
Carpentering	11.00	3.63	.....	14.63
Painting	18.39	22.29	.....	40.68
Tinning	.88	.27	.....	1.15
Heating	2.00	6.38	.....	8.38
Steam fitting	20.63	.....	.....	20.63
Material drawn by janitor	.....	19.01	.....	19.01
Total	52.90	51.58	.....	104.48
Arthur School, No. 70:				
Carpentering	117.57	24.43	.....	142.00
Painting	6.75	3.63	.....	10.38
Tinning	245.38	185.85	.....	431.23
Heating	.56	.....	24.80	25.36
Material drawn by janitor	.....	1.83	.....	1.83
Total	370.26	215.74	24.80	610.80
Banneker School, No. 39:				
Carpentering	46.22	46.54	.....	92.76
Painting	296.19	57.67	.....	353.86
Tinning	6.75	8.54	.....	15.29
Heating	9.89	1.80	25.42	37.11
Gas engine	37.27	16.16	.....	53.43
Put up new and repair old handrails	7.82	2.41	.....	10.23
Total	404.14	133.12	25.42	562.68
Bell School, No. 78:				
Carpentering	53.33	98.94	.....	152.27
Painting	172.25	22.07	.....	194.32
Heating	.....	.....	16.12	16.12
Repairing handrail and putting iron caps on posts	1.88	1.01	.....	2.89
Material drawn by janitor	.....	2.39	.....	2.39
Total	227.46	124.41	16.12	367.99
Bennings School, No. 48:				
Carpentering	212.66	[1]214.63	.....	427.29
Painting	5.75	.54	.....	6.29
Tinning	34.82	11.42	.....	46.24
Steam fitting	2.00	.....	.....	2.00
Repairing stone steps	16.31	.85	.....	17.16
Material drawn by janitor	.....	.47	.....	.47
Total	271.54	227.91	.....	499.45
Berret School, No. 66:				
Painting	.94	.78	.....	1.72
Heating	4.00	1.09	9.22	14.31
Material drawn by janitor	.....	.22	.....	.22
Total	4.94	2.09	9.22	16.25
Birney School, No. 187:				
Carpentering	36.38	18.84	.....	55.22
Painting	5.32	2.07	.....	7.39
Tinning	10.06	2.81	.....	12.87
Heating	.....	.....	28.98	28.98
Gas engine	19.51	9.89	.....	29.40
Material drawn by janitor	.....	2.65	.....	2.65
Total	71.27	36.26	28.98	136.51

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Birney Annex, No. 74:				
Painting	$0.38	$0.10		$0.48
Blaze School, No. 61:				
Carpentering	98.13	89.74		187.87
Painting	399.17	123.53		522.70
Tinning	37.77	13.55		51.32
Heating	.75		$12.55	13.30
Repairing handrails	1.50	1.43		2.93
Material drawn by janitor		3.62		3.62
Total	537.32	231.87	12.55	781.74
Blair School, No. 50:				
Carpentering	236.19	162.98		399.17
Painting	6.32	1.01		7.33
Tinning	14.44	13.65		28.09
Heating			6.74	6.74
Gas engine	26.20	15.42		41.62
Material drawn by janitor		6.12		6.12
Total	283.15	199.18	6.74	489.07
Blow School, No. 145:				
Carpentering	28.91	8.24		37.15
Painting	2.00	1.23		3.23
Tinning	121.31	13.11		134.42
Heating	1.50		33.71	35.21
Motor	10.19	2.58		12.77
Put new hinge on wire fence and repairing hinge on gate	11.88	.56		12.44
Total	175.79	25.72	33.71	235.22
A. Bowen School, No. 109:				
Carpentering	13.25	5.03		18.28
Painting	1.50	.28		1.78
Tinning	30.88	25.08		55.96
Heating	3.00	41.11	10.15	54.26
Gas engine	29.88	5.39	18.50	53.77
Material drawn by janitor		1.84		1.84
Total	78.51	78.73	28.65	185.89
S. J. Bowen No. 123:				
Carpentering	15.72	16.94		32.66
Painting	11.40	3.61		15.01
Tinning	45.81	26.88		72.69
Steamfitting	93.82	18.42		112.24
Material drawn by janitor		2.45		2.45
Total	166.75	68.30		235.05
Bradley School No. 60:				
Carpentering	88.91	8.26		97.17
Painting	6.06	1.88		7.94
Tinning	15.51	4.91		20.42
Heating			9.76	9.76
Material drawn by janitor		1.48		1.48
Total	110.48	16.53	9.76	136.77
Brent School, No. 46:				
Carpentering	97.26	60.22		157.48
Painting	22.54	7.59		30.13
Tinning	4.00	3.40		7.40
Heating	393 93	189.01	106.33	689.27
Gas engine	50.71	9.41		60.12
Miscellaneous	8.56			8.56
Material drawn by janitor		8.17		8.17
Total	577.00	277.80	106.33	961.13
Briggs School, No. 75:				
Carpentering	4.32	.53		4.85
Painting	1.38	.21		1.59
Tinning	9.00	9.71		18.71
Heating	2.00	2.33	76.41	80.74
Total	16.70	12.78	76.41	105.89

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Brightwood School, No. 104:				
Carpentering	$53.00	$18.93		$71.93
Painting	364.09	50.81		414.90
Tinning	102.56	117.63		220.19
Steamfitting	23.14	15.28		38.42
Material drawn by janitor		2.43		2.43
Tota	542.79	205.08		747.87
Brightwood Park, No. 151:				
Carpentering	13.50			13.50
Painting	15.82	4.40		20.22
Tinning	31.75	24.29		56.04
Gas engine	9.26	13.35		22.61
Grading	155.88			155.88
Total	226.21	42.04		268.25
Brookland School, No. 103:				
Carpentering	345.36	187.05		532.41
Painting	12.25	4.36		16.61
Tinning	8.01	3.77		11.78
Heating			$6.35	6.35
Steamfitting	51.45	20.06	108.00	179.51
Material drawn by janitor		.58		.58
Total	417.07	215.82	114.35	747.24
Bruce School, No. 112:				
Carpentering	154.94	69.07		224.01
Painting	7.47	5.68		13.15
Tinning	13.63	7.04		20.67
Heating	3.50	2.47	40.45	46.42
Gas engine	30.16	9.82		39.98
Material drawn by janitor		3.76		3.76
Total	209.70	97.84	40.45	347.99
Bryan School, No. 155:				
Painting	21.88	9.39		31.27
Tinning	69.44	7.06		76.50
Heating	2.56	2.29		4.85
Gas engine	46.70	22.09		68.79
Material drawn by janitor		.62		.62
Total	140.58	41.45		182.03
Buchanan School, No. 96:				
Carpentering	26.38	12.75		39.13
Painting	1.41	.98		2.39
Tinning	5.37	.88		6.25
Heating	7.52	.68	29.76	37.96
Material drawn by janitor		4.30		4.30
Total	40.68	19.59	29.76	90.03
Bunker Hill School, No. 47:				
Carpentering	14.06	11.47		25.53
Painting	6.50	.51		7.01
Tinning	2.81	3.22		6.03
Heating			2.71	2.71
Grading	391.72			391.72
Total	415.09	15.20	2.71	433.00
Burrville School, No. 91:				
Painting	2.50	.78		3.28
Heating	.94	1.23		2.17
Lowering pump			24.15	24.15
Total	3.44	2.01	24.15	29.60
Business High School, No. 144:				
Carpentering	111.43	64.17		175.60
Painting	297.33	91.11		388.44
Tinning	5.52			5.52
Steamfitting	56.12	6.17		62.29
Miscellaneous	7.51	5.41		12.92
Material drawn by janitor		8.94		8.94
Total	477.91	175.80		653.71

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Carbery School, No. 58:				
Carpentering	$163.94	$265.55	.....	$429.49
Painting	157.77	21.29	.....	179.06
Tinning	32.13	11.39	.....	43.52
Heating	.25	1.82	$3.48	5.55
Material drawn by janitor	.....	13.12	.....	13.12
Total	354.09	313.17	3.48	670.74
Cardoza School, No. 148:				
Carpentering	6.50	1.68	.....	8.18
Painting	15.44	10.36	.....	25.80
Tinning	8.76	1.25	.....	10.01
Heating	.....	.....	15.03	15.03
Gas engine	41.26	39.00	.....	80.26
Material drawn by janitor	.....	2.46	.....	2.46
Total	71.96	54.75	15.03	141.74
Central High School, No. 43:				
Carpentering	382.07	131.42	.....	513.49
Painting	37.41	9.53	.....	46.94
Tinning	81.39	59.71	.....	141.10
Heating	17.75	12.57	.....	30.32
Steamfitting	150.45	55.85	.....	206.30
Gas engine	3.63	.09	.....	3.72
Miscellaneous	8.12	2.40	.....	10.52
Material drawn by janitor	.....	4.21	.....	4.21
Total	680.82	275.78	.....	956.60
Chain Bridge School, No. 6:				
Tinning	1.57	1.88	.....	3.45
Chevy Chase School, No. 113:				
Carpentering	312.70	196.89	.....	509.59
Painting	133.64	46.18	.....	179.82
Tinning	16.50	1.59	.....	18.09
Grading	568.05	30.28	.....	598.33
Material drawn by janitor	.....	1.94	.....	1.94
Total	1,030.89	276.88	.....	1,307.77
Cleveland School, No. 165:				
Carpentering	1.13	.....	.....	1.13
Painting	1.00	.59	.....	1.59
Motor	1.88	.....	.....	1.88
Material drawn by janitor	.....	1.44	.....	1.44
Total	4.01	2.03	.....	6.04
Conduit Road School, No. 25:				
Carpentering	29.82	15.32	.....	45.14
Painting	.94	.78	.....	1.72
Heating	.31	.....	.....	.31
Total	31.07	16.10	.....	47.17
Congress Heights School, No. 111:				
Carpentering	265.86	281.01	.....	546.87
Painting	3.00	1.18	.....	4.18
Tinning	200.56	158.74	.....	359.30
Heating	.....	.....	45.27	45.27
Total	469.42	440.93	45.27	955.62
Congress Heights Annex, No. 111:				
Painting	2.88	.78	.....	3.66
J. F. Cook School, No. 30:				
Carpentering	93.01	94.44	.....	187.45
Painting	2.94	1.69	.....	4.63
Tinning	1.50	4.39	.....	5.89
Heating	.....	.....	158.24	158.24
Gas engine	29.82	3.25	.....	33.07
Repairing iron fence	1.78	.....	.....	1.78
Material drawn by janitor	.....	1.10	.....	1.10
Total	129.05	104.87	158.24	392.16

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
H. D. Cooke School, No. 154:				
Carpentering	$2.62			$2.62
Painting	159.97	$32.18		192.15
Tinning	45.32	6.25		51.57
Heating	6.45	37.95		44.40
Gas engine	25.38	6.59		31.97
Grading	16.06			16.06
Material drawn by janitor		3.72		3.72
Total	255.80	86.69		342.49
Corcoran School, No. 68:				
Carpentering	27.17	3.54		30.71
Painting	107.88	54.08		161.96
Tinning	3.25	2.41		5.66
Heating	7.63	5.38	$41.15	54.16
Material drawn by janitor		1.10		1.10
Total	145.93	66.41	41.15	253.59
Cranch School, No. 157:				
Carpentering	91.51	155.64		247.15
Painting	4.72	6.93		11.65
Tinning	51.01	13.33		64.34
Steamfitting	30.12	4.48	162.00	196.60
Material drawn by janitor		1.83		1.83
Total	177.36	182.21	162.00	521.57
Curtis School, No. 26:				
Carpentering	67.51	24.46		91.97
Painting	13.00	7.00		20.00
Tinning	11.51	5.48		16.99
Steamfitting	51.92	15.60		67.52
Material drawn by janitor		3.14		3.14
Total	143.94	55.68		199.62
Crummell School, No. 167:				
Heating			5.81	5.81
Deanwood School, No. 152:				
Carpentering	16.00	41.27		57.27
Painting	16.51	7.09		23.60
Tinning	49.31	17.17		66.48
Heating			20.77	20.77
Material drawn by janitor		2.62		2.62
Total	81.82	68.15	20.77	170.74
Dent School, No. 120:				
Carpentering	87.88	[1] 241.11		328.99
Painting	10.45	3.36		13.81
Heating	5.82	2.27	14.03	22.12
Gas engine	47.65	21.85		69.50
2 new boilers and 2 multivane fans			1,969.00	1,969.00
Material drawn by janitor		2.56		2.56
Total	151.80	271.15	1,983.03	2,405.98
Dennison School, No. 52:				
Carpentering	2.69			2.69
Painting	2.25	1.12		3.37
Tinning	2.76	2.74		5.50
Steamfitting	53.94	14.68		68.62
Material drawn by janitor		2.25		2.25
Total	61.64	20.79		82.43
Douglass School, No. 99:				
Carpentering	56.95	5.35		62.30
Painting	1.50	.21		1.71
Tinning	2.75	1.44		4.19
Heating	2.06			2.06
Material drawn by janitor		1.83		1.83
Total	63.26	8.83		72.09

[1] Part of this material was bought out of the 1911–12 appropriation. Work to be done out of the 1912–13 appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor	Material.	Contract.	Total.
Eastern High School, No. 85:				
Carpentering	$174.20	$115.55		$289.75
Painting	139.26	47.91		187.17
Tinning	36.20	22.83		59.03
Steam fitting	151.49	89.14		240.63
Installation of two new boilers			$1,427.64	1,427.64
Material drawn by janitor		7.35		7.35
Total	501.15	282.78	1,427.64	2,211.57
Eaton School, No. 160:				
Carpentering	3.00			3.00
Tinning	2.75	.81		3.56
Heating		.27		.27
Motor	61.33	36.53		97.86
Material drawn by janitor		1.44		1.44
Total	67.08	39.05		106.13
Eckington School, No. 116.				
Carpentering	173.32	81.26		254.58
Painting	9.66	4.67		14.33
Tinning	13.38	8.12		21.50
Heating	16.26	6.43	29.14	51.83
Gas engine	64.02	28.21		92.23
Material drawn by janitor		2.93		2.93
Total	276.64	131.62	29.14	437.40
Edmonds School, No. 135:				
Carpentering	173.75	93.29		267.04
Painting	12.41	6.07		18.48
Tinning	34.01	13.73		47.74
Heating	2.25		180.03	182.28
Gas engine	89.01	14.35	22.50	125.86
Material drawn by janitor		9.72		9.72
Total	311.43	137.16	202.53	651.12
Emery School, No. 133:				
Carpentering	5.26	15.85		21.11
Painting	5.69	1.64		7.33
Tinning	39.63	20.20		59.83
Steam fitting	17.33	21.08		38.41
Motor	.38			.38
Material drawn by janitor		2.35		2.35
Total	68.29	61.12		129.41
Fillmore School, No. 92:				
Carpentering	340.53	54.13		394.66
Painting	4.82	2.15		6.97
Tinning	2.00	.58		2.58
Heating			33.71	33.71
Material drawn by janitor		2.18		2.18
Total	347.35	59.04	33.71	440.10
Force School, No. 32:				
Carpentering	27.13	10.09		37.22
Painting	7.35	3.75		11.10
Tinning	21.14	5.57		26.71
Steam fitting	150.95	199.68		350.63
Gas engine	5.00			5.00
Total	211.57	219.09		430.66
Franklin School, No. 15:				
Carpentering	103.33	90.27		193.60
Painting	19.38	5.02		24.40
Tinning	19.00	5.09		24.09
Heating	10.50	3.12		13.62
Steam fitting	42.70	14.59		57.29
Miscellaneous	1.78			1.78
Material drawn by janitor		1.54		1.54
Total	196.69	119.63		316.32

[1] Part of this materia was bought out of the 1911–12 appropriation. Work to be done out of the 1912–13 appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
B. B. French School, No. 141:				
Carpentering	$5.00	$0.62	.....	$5.62
Painting	8.03	6.81	.....	14.84
Tinning	32.50	24.75	.....	57.25
Heating	.....	.....	$34.72	34.72
Gas engine	18.07	1.09	.....	19.16
Miscellaneous	2.00	.....	.....	2.00
Material drawn by janitor	.....	3.74	.....	3.74
Total	65.60	37.01	34.72	137.33
Gage School, No. 143:				
Carpentering	43.70	5.85	.....	49.55
Painting	141.09	39.77	.....	180.86
Tinning	5.70	.....	.....	5.70
Heating	5.00	2.66	351.38	359.04
Gas engine	24.65	4.93	.....	29.58
Material drawn by janitor	.....	1.10	.....	1.10
Total	220.14	54.31	351.38	625.83
Gales School, No. 36:				
Carpentering	4.00	4.78	.....	8.78
Painting	1.22	1.08	.....	2.30
Tinning	278.54	135.92	.....	414.46
Steam fitting	52.99	38.80	188.55	280.34
Material drawn by janitor	.....	9.38	.....	9.38
Total	336.75	189.96	188.55	715.26
Garfield School, No. 158:				
Carpentering	50.50	4.11	.....	54.61
Painting	143.91	35.09	.....	179.00
Tinning	62.32	20.43	.....	82.75
Gas engine	22.01	3.25	.....	25.26
Material drawn by janitor	.....	4.71	.....	4.71
Total	278.74	67.59	.....	346.33
Garnet School, No. 34:				
Carpentering	69.79	32.08	.....	101.87
Painting	9.31	4.82	.....	14.13
Tinning	3.07	1.33	.....	4.40
Heating	.63	.....	.....	.63
Steamfitting	73.03	162.25	9.00	244.28
Miscellaneous	1.81	.....	.....	1.81
Material drawn by janitor	.....	2.26	.....	2.26
Total	157.64	202.74	9.00	369.38
Garrison School, No. 76:				
Carpentering	7.00	6.25	.....	13.25
Painting	.94	.60	.....	1.54
Tinning	17.71	5.70	.....	23.41
Heating	.....	.....	24.26	24.26
Material drawn by janitor	.....	1.32	.....	1.32
Total	25.65	13.87	24.26	63.78
Giddings School, No. 63:				
Carpentering	75.91	5.47	.....	81.38
Heating	306.15	108.36	12.79	427.30
Total	382.06	113.83	12.79	508.68
Grant School, No. 41:				
Carpentering	224.41	69.53	.....	293.94
Painting	4.56	2.34	.....	6.90
Tinning	16.59	8.09	.....	24.68
Heating	3.06	.14	.....	3.20
Steamfitting	44.12	18.29	.....	62.41
Erection of two metal stacks	.....	.....	575.00	575.00
Material drawn by janitor	.....	1.83	.....	1.83
Total	292.74	100.22	575.00	967.96
Greenleaf School, No. 105:				
Carpentering	5.00	.52	.....	5.52
Painting	.50	.07	.....	.57
Tinning	10.31	10.34	.....	20.65
Heating	.....	.....	52.62	52.62

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Greenleaf School, No. 105—Continued.				
Gas engine	$24.58	$15.90	.....	$40.48
Material drawn by janitor	.....	2.11	.....	2.11
Total	40.39	28.94	$52.62	121.95
Hamilton School, No. 37:				
Carpentering	33.06	30.95	.....	64.01
Painting	6.88	2.31	.....	9.19
Tinning	11.37	3.70	.....	15.07
Total	51.31	36.96	.....	88.27
Harrison School, No. 84:				
Carpentering	117.41	51.50	.....	168.91
Painting	3.50	.56	.....	4.06
Tinning	113.26	66.30	.....	179.56
Heating	.....	.....	2.94	2.94
Material drawn by janitor	.....	2.41	.....	2.41
Total	234.17	120.77	2.94	357.88
Hayes School, No. 107:				
Carpentering	34.32	20.65	.....	54.97
Painting	122.41	38.50	.....	160.91
Tinning	14.19	17.04	.....	31.23
Heating	.....	.....	52.13	52.13
Gas engine	30.90	24.99	.....	55.89
Material drawn by janitor	.....	7.33	.....	7.33
Total	201.82	108.51	52.13	362.46
Henry School, No. 33:				
Carpentering	63.41	9.78	.....	73.19
Painting	8.51	4.65	.....	13.16
Tinning	11.19	11.86	.....	23.05
Steamfitting	93.86	28.38	111.15	233.39
Material drawn by janitor	.....	5.85	.....	5.85
Total	176.97	60.52	111.15	348.64
Hilton School, No. 115:				
Carpentering	39.85	27.34	.....	67.19
Painting	9.91	4.81	.....	14.72
Heating	3.44	.33	16.43	20.20
Gas engine	32.20	14.85	.....	47.05
Miscellaneous	7.50	.37	.....	7.87
Material drawn by janitor	.....	2.88	.....	2.88
Total	92.90	50.58	16.43	159.91
Hubbard School, No. 119:				
Carpentering	4.00	2.54	.....	6.54
Painting	29.57	6.81	.....	36.38
Tinning	46.51	5.70	.....	52.21
Heating	1.01	.....	74.40	75.41
Gas engine	31.65	1.73	.....	33.38
Material drawn by janitor	.....	1.10	.....	1.10
Total	112.74	17.88	74.40	205.02
Hyde School, No. 147:				
Painting	1.50	.39	.....	1.89
Tinning	9.00	2.88	.....	11.88
Heating	.....	.....	27.00	27.00
Gas engine	44.27	19.80	22.50	86.57
Miscellaneous	20.41	1.07	.....	21.48
Total	75.18	24.14	49.50	148.82
Ivy City School, No. 100:				
Painting	2.44	.....	.....	2.44
Tinning	22.06	10.36	.....	32.42
Gas engine	.75	.....	.....	.75
Total	25.25	10.36	.....	35.61
Jackson School, No. 69:				
Carpentering	221.94	85.38	.....	307.32
Painting	9.75	2.78	.....	12.53
Tinning	52.56	38.70	.....	91.26

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Jackson School, No. 69—Continued.				
Heating	$3.63	$0.63	$50.68	$54.94
Material drawn by janitor	.....	5.87	.....	5.87
Total	287.88	133.36	50.68	471.92
Jefferson School, No. 23:				
Carpentering	164.07	[1] 353.00	.....	517.07
Painting	31.93	4.29	.....	36.22
Tinning	4.00	3.76	.....	7.76
Steam fitting	74.65	82.07	.....	156.72
Material drawn by janitor	.....	24.17	.....	24.17
Total	274.65	467.29	.....	741.94
Johnson School, No. 95:				
Carpentering	8.25	2.06	.....	10.31
Painting	6.94	2.26	.....	9.20
Tinning	9.01	5.57	.....	14.58
Heating	4.75	1.18	.....	5.93
Grading	8.44	.....	.....	8.44
Material drawn by janitor	.....	1.10	.....	1.10
Total	37.39	12.17	.....	49.56
Johnson Annex, No. 21:				
Painting	1.00	.26	.....	1.26
Jones School, No. 77:				
Carpentering	125.14	[1] 234.02	.....	359.16
Painting	6.79	2.97	.....	9.76
Tinning	226.71	171.75	.....	398.46
Heating	2.50	.....	93.19	95.69
Material drawn by janitor	.....	3.19	.....	3.19
Total	361.14	411.93	93.19	866.26
Kenilworth School, No. 128:				
Carpentering	8.00	11.89	.....	19.89
Painting	1.32	.82	.....	2.14
Tinning	13.20	5.65	.....	18.85
Heating	5.01	.....	33.32	38.33
Motor	1.75	.07	.....	1.82
Material drawn by janitor	.....	3.27	.....	3.27
Total	29.28	21.70	33.32	84.30
Ketcham School, No. 149:				
Carpentering	26.66	15.61	.....	42.27
Painting	2.47	.84	.....	3.31
Tinning	11.00	2.78	.....	13.78
Heating	.....	.....	24.50	24.50
Gas engine	23.26	13.24	22.50	59.00
Material drawn by janitor	.....	1.15	.....	1.15
Total	63.39	33.62	47.00	144.01
Langdon School, No. 108:				
Carpentering	9.04	4.14	.....	13.18
Painting	2.82	1.77	.....	4.59
Tinning	6.00	10.23	.....	16.23
Heating	142.40	74.28	164.72	381.40
Motor	1.13	.....	.....	1.13
Material drawn by janitor	.....	12.64	.....	12.64
Total	161.39	103.06	164.72	429.17
Langston School, No. 132:				
Painting	14.00	6.12	.....	20.12
Tinning	1.13	.89	.....	2.02
Heating	.....	.....	90.75	90.75
Gas engine	22.16	3.25	22.50	47.91
Material drawn by janitor	.....	2.91	.....	2.91
Total	37.29	13.17	113.25	163.71
Lenox School, No. 67:				
Carpentering	103.31	10.07	.....	113.38
Painting	1.00	.10	.....	1.10
Tinning	8.00	9.48	.....	17.48

[1] Part of this material was bought out of the 1911–12 appropriation. Work to be done out of the 1912–13 appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Lenox School, No. 67—Continued.				
Heating	$8.94	$41.15	$335.38	$385.47
Material drawn by janitor	.....	6.72	.....	6.72
Total	121.25	67.52	335.38	524.15
Lincoln School, No. 18:				
Carpentering	30.10	22.73	.....	52.83
Painting	19.51	2.57	.....	22.08
Tinning	8.76	5.44	.....	14.20
Steam fitting	33.78	12.00	.....	45.78
Material drawn by janitor	.....	2.65	.....	2.65
Total	92.15	45.39	.....	137.54
Logan School, No. 90:				
Carpentering	207.32	259.90	.....	467.22
Painting	111.66	26.35	.....	138.01
Tinning	24.94	9.31	.....	34.25
Heating	.31	.62	31.47	32.40
Material drawn by janitor	.....	2.93	.....	2.93
Total	344.23	299.11	31.47	674.81
Lovejoy School, No. 124:				
Carpentering	81.38	15.91	.....	97.29
Painting	3.47	.80	.....	4.27
Tinning	98.58	57.71	.....	156.29
Heating	3.01	.....	14.03	17.04
Gas engine	40.03	32.64	.....	72.67
Miscellaneous	21.41	.83	.....	22.24
Material drawn by janitor	.....	5.96	.....	5.96
Total	247.88	113.85	14.03	375.76
Ludlow School, No. 142:				
Carpentering	66.00	11.38	.....	77.38
Painting	5.41	2.83	.....	8.24
Tinning	12.58	5.93	.....	18.51
Heating	.....	.....	22.32	22.32
Gas engine	50.16	12.56	22.50	85.22
Miscellaneous	8.75	.....	.....	8.75
Material drawn by janitor	.....	2.06	.....	2.06
Total	142.90	34.76	44.82	222.48
Madison School, No. 71:				
Carpentering	102.57	7.66	.....	110.23
Painting	2.82	.16	.....	2.98
Tinning	2.00	.....	.....	2.00
Heating	.50	5.15	33.40	39.05
Miscellaneous	6.19	.....	.....	6.19
Material drawn by janitor	.....	2.82	.....	2.82
Total	114.08	15.79	33.40	163.27
Magruder School, No. 62:				
Carpentering	373.26	130.54	.....	503.80
Painting	9.28	7.35	.....	16.63
Heating	3.47	1.34	22.78	27.59
Miscellaneous	20.94	.24	.....	21.18
Total	406.95	139.47	22.78	569.20
Maury School No. 55:				
Carpentering	56.57	184.81	.....	241.38
Painting	8.40	2.25	.....	10.65
Tinning	20.50	16.99	.....	37.49
Heating	10.88	8.36	33.87	53.11
Gas engine	73.16	12.32	.....	85.48
Material drawn by janitor	.....	11.97	.....	11.97
Total	169.51	236.70	33.87	440.08
M Street High School, No. 82:				
Carpentering	132.35	54.53	.....	186.88
Painting	178.12	76.19	.....	254.31
Tinning	13.50	12.31	.....	25.81
Heating	3.76	4.08	.....	7.84
Steamfitting	62.26	5.09	.....	67.35
Miscellaneous	24.09	.....	.....	24.09
Material drawn by janitor	.....	5.25	.....	5.25
Total	414.08	157.45	.....	571.53

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
M Street power plant:				
Material furnished engineer	.....	$30.96	.....	$30.96
Mc Cormick School, No. 16:				
Carpentering	$164.52	105.81	.....	270.33
Painting	5.03	2.29	.....	7.32
Tinning	10.31	2.47	.....	12.78
Heating	.....	.....	$29.45	29.45
Total	179.86	110.57	29.45	319.88
Mc Kinley School, No. 130:				
Carpentering	26.63	14.64	.....	41.27
Painting	50.22	29.16	.....	79.38
Tinning	27.44	12.78	.....	40.22
Heating	4.24	.04	.....	4.28
Steamfitting	42.94	8.47	.....	51.41
Miscellaneous	.....	1.50	.....	1.50
Material drawn by janitor	.....	2.20	.....	2.20
Total	151.47	68.79	.....	220.26
Military Road School, No. 8:				
Heating	3.26	8.45	.....	11.71
Monroe School, No. 72:				
Carpentering	444.64	25.07	.....	469.71
Painting	21.00	7.17	.....	28.17
Tinning	38.13	23.31	.....	61.44
Heating	.....	.....	4.73	4.73
Motor	9.28	5.61	.....	14.89
Install cut-out box	.....	.....	11.00	11.00
Material drawn by janitor	.....	11.09	.....	11.09
Total	513.05	72.25	15.73	601.03
Montgomery School, No. 140:				
Carpentering	64.07	[1] 275.59	.....	339.66
Painting	1.94	.99	.....	2.93
Heating	3.63	2.11	193.36	199.10
Gas engine	23.25	9.44	.....	32.69
Material drawn by janitor	.....	1.89	.....	1.89
Total	92.89	290.02	193.36	576.27
Morgan School, No. 125:				
Carpentering	252.47	10.10	.....	262.57
Painting	368.71	110.02	.....	478.73
Tinning	92.00	61.12	.....	153.12
Heating	3.52	.....	53.17	56.69
Gas engine	33.52	6.63	.....	40.15
Material drawn by janitor	.....	4.10	.....	4.10
Total	750.22	191.97	53.17	995.36
Morse School, No. 44:				
Carpentering	42.38	51.17	.....	93.55
Painting	16.63	4.41	.....	21.04
Tinning	7.01	6.94	.....	13.95
Heating	.50	.....	1.21	1.71
Gas engine	25.56	8.09	.....	33.65
Material drawn by janitor	.....	.73	.....	.73
Total	92.08	71.34	1.21	164.63
New Mott School, No. 153:				
Carpentering	1.69	.....	.....	1.69
Painting	45.70	20.70	.....	66.40
Tinning	24.75	2.22	.....	26.97
Heating	48.14	3.06	.....	51.20
Gas engine	25.70	4.14	.....	29.84
Miscellaneous	3.63	.16	.....	3.79
Material drawn by janitor	.....	3.97	.....	3.97
Total	149.61	34.25	.....	183.86
Old Mott School, No. 40:				
Carpentering	3.00	1.05	.....	
Painting	1.38	.73	.....	

[1] Part of this material was bought out of the 1911–12 appropriation. Work to be done out of th appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Old Mott School No. 40—Continued.				
Tinning	$3.51	$3.62	.....	$7.13
Steamfitting	11.25	.04	.....	11.29
Total	19.14	5.44	.....	24.58
Orr School, No. 122:				
Carpentering	169.25	62.76	.....	232.01
Painting	19.53	14.41	.....	33.94
Tinning	6.00	1.44	.....	7.44
Heating	27.00	11.85	$17.72	56.57
Grading	35.38	.....	.....	35.38
Material drawn by janitor	.....	.36	.....	.36
Total	257.16	90.82	17.72	365.70
Patterson School, No. 93:				
Carpentering	130.35	60.24	.....	190.59
Painting	3.35	.45	.....	3.80
Tinning	39.44	32.40	.....	71.84
Heating	.....	.....	5.42	5.42
Material drawn by janitor	.....	1.83	.....	1.83
Total	173.14	94.92	5.42	273.48
Payne School, No. 98:				
Carpentering	131.19	182.33	.....	313.52
Painting	18.19	12.75	.....	30.94
Tinning	49.88	30.47	.....	80.35
Heating	.....	.....	53.78	53.78
Gas engine	26.25	14.74	.....	40.99
Material drawn by janitor	.....	.55	.....	.55
Total	225.51	240.84	53.78	520.13
Peabody School, No. 31:				
Carpentering	15.00	[1] 221.72	.....	236.72
Painting	225.89	63.03	.....	288.92
Heating	8.25	.....	.....	8.25
Steamfitting	104.89	37.35	.....	142.24
Material drawn by janitor	.....	2.93	.....	2.93
Total	354.03	325.03	.....	679.06
Petworth School, No. 131:				
Carpentering	627.02	231.80	.....	858.82
Painting	446.05	148.74	.....	594.79
Tinning	13.64	4.64	.....	18.28
Heating	5.64	3.33	24.64	33.61
Gas engine	66.39	90.29	22.50	179.18
Miscellaneous	2.38	.....	.....	2.38
Material drawn by janitor	.....	1.84	.....	1.84
Total	1,161.12	480.64	47.14	1,688.90
Phelps School, No. 57:				
Carpentering	64.76	60.13	.....	124.89
Painting	7.62	4.26	.....	11.88
Heating	.....	.....	14.95	14.95
Miscellaneous	1.56	.....	.....	1.56
Material drawn by janitor	.....	1.83	.....	1.83
Total	73.94	66.22	14.95	155.11
Phillips School, No. 81:				
Carpentering	7.60	.....	.....	7.60
Painting	1.50	.27	.....	1.77
Tinning	173.32	162.66	.....	335.98
Heating	.....	.....	46.03	46.03
Material drawn by janitor	.....	2.15	.....	2.15
Total	182.42	165.08	46.03	393.53
Pierce School, No. 94:				
Carpentering	101.29	12.91	.....	114.20
Painting	2.28	1.48	.....	3.76
Tinning	145.81	168.17	.....	313.98
Heating	2.82	3.58	.....	6.40
Material drawn by janitor	.....	6.14	.....	6.14
Total	252.20	192.28	.....	444.48

[1] Part of this material was bought out of the 1911–12 appropriation. Work to be done out the 1912–13 appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Polk School, No. 86:				
Carpentering	$107.19	$131.28		$238.47
Painting	11.01	4.08		15.09
Tinning	18.57	6.18		24.75
Heating	6.50	2.21	$24.18	32.89
Material drawn by janitor		4.51		4.51
Total	143.27	148.26	24.18	315.71
Old Potomac School, No. 17:				
Carpentering	5.50	11.04		16.54
New Potomac School, No. 159:				
Painting	4.22	2.29		6.51
Gas engines	16.38	8.76		25.14
Grading	26.07			26.07
Total	46.67	11.05		57.72
Powell School No. 157:				
Carpentering	3.75	.81		4.56
Painting	2.47	1.76		4.23
Tinning	1.44			1.44
Heating	6.19	.82	2.82	9.83
Motor	7.27	.09		7.36
Total	21.12	3.48	2.82	27.42
Randall School No. 28:				
Carpentering	183.88	79.51		263.39
Painting	4.40	2.02		6.42
Tinning	10.00	3.32		13.32
Heating	3.38	1.30	27.67	32.35
Material drawn by janitor		2.24		2.24
Total	201.66	88.39	27.67	317.72
Reno School, No. 139:				
Carpentering	84.88	62.40		147.28
Tinning	14.88	8.87		23.75
Heating			45.02	45.02
Material drawn by janitor		1.25		1.25
Total	99.76	72.52	45.02	217.30
Reservoir School, No. 110:				
Painting	3.00	.75		3.75
Heating	5.65	2.66	114.00	122.31
Total	8.65	3.41	114.00	126.06
Ross School, No. 146:				
Carpentering	54.19	15.32		69.51
Painting	7.25	3.88		11.13
Heating	5.19	2.24	65.33	72.76
Motor	3.14	.39		3.53
Total	69.77	21.83	65.33	156.93
Seaton School, No. 22:				
Carpentering	79.26	146.80		226.06
Painting	227.75	48.82		276.57
Tinning	3.01	1.07		4.08
Steamfitting	165.63	66.02		231.65
Miscellaneous	.38	1.05		1.43
Material drawn by janitor		3.01		3.01
Total	476.03	266.77		742.80
Simmons School, No. 134:				
Tinning	71.70	28.37		100.07
Slater School, No. 80:				
Carpentering	154.32	169.83		324.15
Painting	8.00	2.67		10.67
Tinning	1.50	5.60		7.10
Heating	6.19	1.10	35.02	42.31
Material drawn by janitor		1.91		1.91
Total	170.01	181.11	35.02	386.14

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Fort Slocum School, No. 11:				
Carpentering	$13.75	$49.82	.....	$63.57
Painting	1.13	.08	.....	1.21
Tinning	30.01	24.10	.....	54.11
Total	44.89	74.00	.....	118.89
Smallwood School, No. 64:				
Carpentering	52.69	16.84	.....	69.53
Painting	1.44	1.49	.....	2.93
Tinning	9.63	2.93	.....	12.56
Heating	.....	.....	$42.70	42.70
Material drawn by janitor	.....	4.24	.....	4.24
Total	63.76	25.50	42.70	131.96
H. Smothers School, No. 50:				
Carpentering	55.53	60.97	.....	116.50
Painting	.47	1.14	.....	1.61
Tinning	6.31	2.87	.....	9.18
Material drawn by janitor	.....	1.83	.....	1.83
Total	62.31	66.81	.....	129.12
Stanton School, No. 138:				
Carpentering	246.72	99.87	.....	346.59
Painting	1.94	.63	.....	2.57
Tinning	6.50	.67	.....	7.17
Heating	.31	.....	47.04	47.35
Material drawn by janitor	.....	2.94	.....	2.94
Total	255.47	104.11	47.04	406.62
Stevens School, No. 97:				
Carpentering	90.20	3.04	.....	93.24
Tinning	150.82	87.58	.....	238.40
Steam fitting	121.70	122.46	117.00	361.16
Material drawn by janitor	.....	5.47	.....	5.47
Total	362.72	218.55	117.00	698.27
Sumner School, No. 19:				
Carpentering	323.19	67.97	.....	391.16
Painting	8.44	6.60	.....	15.04
Tinning	80.27	34.09	.....	114.36
Steam fitting	35.29	7.79	.....	43.08
Material drawn by janitor	.....	.73	.....	.73
Total	447.19	117.18	.....	564.37
Syphax School, No. 126:				
Carpentering	93.38	29.82	.....	123.20
Painting	14.13	8.42	.....	22.55
Tinning	3.50	2.98	.....	6.48
Steam fitting	66.58	18.76	.....	85.34
Material drawn by janitor	.....	3.75	.....	3.75
Total	177.59	63.73	.....	241.32
Takoma School, No. 118:				
Carpentering	210.57	89.22	.....	299.79
Painting	61.13	29.10	.....	90.23
Tinning	20.12	11.76	.....	31.88
Heating	.....	.....	323.56	323.56
Gas engine	11.63	3.25	.....	14.88
Grading	6.00	.....	.....	6.00
Material drawn by janitor	.....	2.79	.....	2.79
Total	309.45	136.12	323.56	769.13
Taylor School, No. 88:				
Carpentering	47.11	7.06	.....	54.17
Painting	5.16	.65	.....	5.81
Tinning	4.06	2.13	.....	6.19
Heating	30.07	4.07	6.04	40.18
Miscellaneous	4.31	.55	.....	4.86
Total	90.71	14.46	6.04	111.21

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Tenley School, No. 102:				
Carpentering	$83.06	[1] $218.79	.....	$301.85
Painting	5.44	3.44	.....	8.88
Tinning	10.76	6.27	.....	17.03
Steam fitting	27.02	11.84	.....	38.86
Material drawn by janitor	.....	1.84	.....	1.84
Total	126.28	242.18	.....	368.46
Tenley School Annex:				
Tinning	9.63	3.58	.....	13.21
Thomson School, No. 156:				
Carpentering	53.82	17.71	.....	71.53
Painting	7.47	3.16	.....	10.63
Tinning	22.88	9.76	.....	32.64
Heating	3.13	1.01	$17.67	21.81
Gas engine	5.25	.05	.....	5.30
Grading	10.75	.....	.....	10.75
Miscellaneous	.63	.17	.....	.80
Material drawn by janitor	.....	1.15	.....	1.15
Total	103.93	33.01	17.67	154.61
Threlkeld School, No. 14:				
Carpentering	215.44	101.33	.....	316.77
Painting	24.43	9.63	.....	34.06
Tinning	6.50	6.70	.....	13.20
Heating	.....	.....	43.00	43.00
Total	246.37	117.66	43.00	407.03
Toner School, No. 114:				
Carpentering	43.44	49.30	.....	92.74
Painting	4.02	1.72	.....	5.74
Tinning	5.76	2.18	.....	7.94
Heating	.....	.....	23.79	23.79
Gas engine	110.10	79.31	18.50	207.91
Material drawn by janitor	.....	1.72	.....	1.72
Total	163.32	134.23	42.29	339.84
Towers School, No. 59:				
Carpentering	164.38	239.32	.....	403.70
Painting	8.26	2.93	.....	11.19
Heating	.50	.....	24.48	24.98
Material drawn by janitor	.....	3.76	.....	3.76
Total	173.14	246.01	24.48	443.63
Twining School, No. 45:				
Carpentering	253.44	105.04	.....	358.48
Painting	10.28	4.44	.....	14.72
Tinning	9.63	4.12	.....	13.75
Heating	31.81	15.76	28.64	76.21
Gas engine	44.96	4.95	.....	49.91
Material drawn by janitor	.....	.73	.....	.73
Total	350.12	135.04	28.64	513.80
Tyler School, No. 83:				
Carpentering	230.42	271.19	.....	501.61
Painting	1.90	1.04	.....	2.94
Tinning	28.58	17.53	.....	46.11
Heating	.....	.....	7.36	7.36
Miscellaneous	3.56	1.35	.....	4.91
Material drawn by janitor	.....	4.92	.....	4.92
Total	264.46	296.03	7.36	567.85
Van Buren School, No. 87:				
Carpentering	39.06	4.71	.....	43.77
Painting	5.34	3.13	.....	8.47
Tinning	13.70	2.93	.....	16.63
Heating	.....	.....	1.55	1.55
Material drawn by janitor	.....	6.46	.....	6.46
Total	58.10	17.23	1.55	76.88

[1] Part of this material was bought out of the 1911–12 appropriation. Work to be done out of the 1912–13 appropriation.

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Van Buren Annex, No. 38:				
Carpentering	$2.00	$0.48	.....	$2.48
Painting	2.50	.95	.....	3.45
Total	4.50	1.43	.....	5.93
Van Ness School, No. 150:				
Carpentering	15.38	5.73	.....	21.11
Painting	3.88	.99	.....	4.87
Heating	4.33	8.77	.....	13.10
Gas engine	50.77	13.82	.....	64.59
Material drawn by janitor	.....	2.39	.....	2.39
Total	74.36	31.70	.....	106.06
Wallach School, No. 4:				
Carpentering	140.82	103.58	.....	244.40
Painting	3.88	1.74	.....	5.62
Tinning	116.71	125.11	.....	241.82
Steam fitting	58.14	13.80	.....	71.94
Material drawn by janitor	.....	4.22	.....	4.22
Total	319.55	248.45	.....	568.00
Webb School, No. 121:				
Carpentering	2.00	2.03	.....	4.03
Painting	1.47	1.08	.....	2.55
Tinning	2.06	1.25	.....	3.31
Heating	.....	.....	$2.71	2.71
Gas engine	22.51	9.47	.....	31.98
Material drawn by janitor	.....	1.10	.....	1.10
Total	28.04	14.93	2.71	45.68
Webster School, No. 51:				
Carpentering	27.00	5.44	.....	32.44
Painting	1.94	.87	.....	2.81
Tinning	9.31	1.91	.....	11.22
Miscellaneous	47.21	16.41	.....	63.62
Material drawn by janitor	.....	2.11	.....	2.11
Total	85.46	26.74	.....	112.20
Weightman School, No. 54:				
Carpentering	122.70	129.02	.....	251.72
Painting	2.44	1.57	.....	4.01
Heating	14.50	4.03	5.27	23.80
Material drawn by janitor	.....	2.78	.....	2.78
Total	139.04	137.40	5.27	282.31
Western High School, No. 117:				
Carpentering	857.30	406.80	.....	1,264.10
Painting	407.69	169.17	.....	576.86
Tinning	163.50	93.86	.....	257.36
Steam fitting	591.95	806.70	.....	1,398.65
Grading	852.86	181.94	.....	1,034.80
Miscellaneous	171.48	5.16	66.63	243.27
Material drawn by janitor	.....	14.93	.....	14.93
Total	3 044.78	1,678.56	66.63	4,789.97
Wheatley School, No. 136:				
Carpentering	23.81	13.10	.....	36.91
Painting	31.60	27.58	.....	59.18
Tinning	77.88	27.14	.....	105.02
Heating	1.00	1.47	3.33	5.80
Gas engine	31.76	6.82	.....	38.58
Grading	4.81	.....	.....	4.81
Material drawn by janitor	.....	7.59	.....	7.59
Total	170.86	83.70	3.33	257.89
Wilson School, No. 89:				
Carpentering	20.45	7.88	.....	28.33
Painting	1.00	2.19	.....	3.19
Tinning	167.01	181.94	.....	348.95
Heating	.....	.....	60.29	60.29
Material drawn by janitor	.....	2.78	.....	2.78
Total	188.46	194.79	60.29	443.54

Public schools, District of Columbia, 1911–12, repairs to buildings, heating apparatus, etc.—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Woodburn School, No. 101:				
Carpentering	$83.53	$69.68	.....	$153.21
Painting	2.47	5.42	.....	7.89
Tinning	1.57	1.61	.....	3.18
Heating	.....	.....	$24.00	24.00
Material drawn by janitor	.....	1.89	.....	1.89
Total	87.57	78.60	24.00	190.17
Wormley School, No. 49:				
Carpentering	73.45	132.06	.....	205.51
Painting	4.90	.88	.....	5.78
Tinning	15.81	9.79	.....	25.60
Heating	.....	.....	61.77	61.77
Gas engine	31.53	14.43	.....	45.96
Material drawn by janitor	.....	1.47	.....	1.47
Total	125.69	158.63	61.77	346.09

SUMMARY.

Total amount accounted for on written orders	$58,829.78
Miscellaneous time consumed on written orders in shop and on various schools	2,828.12
Miscellaneous material drawn for use in shop and on various schools	635.53
Purchase of forage	500.09
Purchase of tires for buggy (prorated)	11.94
Purchase of mules (prorated)	202.40
Purchase of horse (prorated)	131.60
Purchase of lathe (prorated)	261.32
Horseshoeing	221.31
Telephone service, superintendent's residence	24.00
Material on hand	6,242.91
Unexpended	111.00
	70,000.00

Fire department, District of Columbia, 1912 (repairs to engine houses).

[Appropriation, $12,000.]

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 engine house:				
Carpentering	$66.19	$64.98	.....	$131.17
Tinning	22.00	15.50	.....	37.50
Plumbing	2.50	1.01	.....	3.51
Heating	.....	2.00	.....	2.00
Material drawn by captain	.....	1.75	.....	1.75
Total	90.69	85.24	.....	175.93
No. 2 engine house:				
Carpentering	133.63	72.22	.....	205.85
Painting	7.14	5.66	.....	12.80
Plumbing	1.50	.45	.....	1.95
Steamfitting	136.01	341.46	.....	477.47
Miscellaneous	2.50	1.27	.....	3.77
Material drawn by captain	.....	1.90	.....	1.90
Total	280.78	422.96	.....	703.74
No. 4 engine house:				
Carpentering	861.17	536.72	.....	1,397.89
Painting	228.42	96.97	.....	325.39
Tinning	56.07	44.86	.....	100.93
Plumbing	5.75	6.12	.....	11.87
Miscellaneous	26.60	39.11	.....	65.71
Material drawn by captain	.....	30.54	.....	30.54
Total	1,178.01	754.32	.....	1,932.33
No. 5 engine house:				
Carpentering	104.80	64.73	.....	169.53
Painting	12.04	7.14	.....	19.18
Plumbing	9.50	153.39	.....	162.89
Heating	.....	4.00	.....	4.00
Total	126.34	229.26	.....	355.60

Fire department, District of Columbia, 1912 (repairs to engine houses)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 6 engine house:				
Carpentering	$14.19	$9.80	.....	$23.99
Painting	2.45	1.21	.....	3.66
Tinning	1.01	.....	.....	1.01
Plumbing	1.25	6.25	.....	7.50
Heating	.....	2.00	.....	2.00
Miscellaneous	23.29	1.19	.....	24.48
Total	42.19	20.45	.....	62.64
No. 7 engine house:				
Carpentering	91.75	52.92	.....	144.67
Painting	17.50	10.47	.....	27.97
Tinning	22.75	22.84	.....	45.59
Heating	6.06	3.49	.....	9.55
Miscellaneous	54.25	68.20	.....	122.45
Erection of 6 iron stalls	.....	.....	$448.00	448.00
Material drawn by captain	.....	8.98	.....	8.98
Total	192.31	166.90	448.00	807.21
No. 8 engine house:				
Carpentering	207.41	176.41	.....	383.82
Painting	10.98	3.53	.....	14.51
Tinning	8.87	31.32	.....	40.19
Plumbing	10.00	2.91	.....	12.91
Heating	12.64	1.40	.....	14.04
Miscellaneous	1.40	.....	.....	1.40
Material drawn by captain	.....	8.37	.....	8.37
Total	251.30	223.94	.....	475.24
No. 9 engine house:				
Carpentering	61.94	33.31	.....	95.25
Painting	1.87	2.10	.....	3.97
Plumbing	6.00	3.76	.....	9.76
Heating	7.13	7.81	.....	14.94
Steamfitting	92.86	263.46	.....	356.32
Material drawn by captain	.....	14.97	.....	14.97
Total	169.80	325.41	.....	495.21
No 10 engine house:				
Carpentering	44.31	28.09	.....	72.40
Painting	2.00	1.06	.....	3.06
Tinning	4.25	4.88	.....	9.13
Plumbing	17.19	.99	.....	18.18
Material drawn by captain	.....	3.08	.....	3.08
Total	67.75	38.10	.....	105.85
No. 11 engine house:				
Carpentering	117.58	68.94	.....	186.52
Painting	1.40	.63	.....	2.03
Tinning	8.57	5.42	.....	13.99
Plumbing	2.75	2.50	.....	5.25
Heating	7.01	1.54	.....	8.55
Grading	1.75	.....	.....	1.75
Total	139.06	79.03	.....	218.09
No. 12 engine house:				
Carpentering	88.85	69.31	.....	158.16
Painting	19.22	11.80	.....	31.02
Plumbing	11.69	1.54	.....	13.23
Heating	.....	3.00	.....	3.00
Total	119.76	85.65	.....	205.41
No. 13 engine house:				
Carpentering	72.82	54.81	.....	127.63
Plumbing	.....	.42	.....	.42
Economizer on furnace	.....	.....	50.00	50.00
Total	72.82	55.23	50.00	178.05
No. 14 engine house:				
Carpentering	50.19	26.24	.....	76.43
Painting	.57	.60	.....	1.17
Tinning	2.75	1.18	.....	3.93
Plumbing	5.50	1.74	.....	7.24
Heating	8.25	3.12	.....	11.37

Fire department, District of Columbia, 1912 (repairs to engine houses)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 14 engine house—Continued.				
Miscellaneous	$5.67	$0.50	.....	$6.17
Material drawn by captain	.....	1.24	.....	1.24
Total	72.93	34.62	.....	107.55
No. 15 engine house:				
Carpentering	27.00	17.04	.....	44.04
Painting	116.50	72.11	.....	188.61
Tinning	262.52	76.04	.....	338.56
Plumbing	3.75	4.81	.....	8.56
Heating	2.51	.....	.....	2.51
Steamfitting	.75	.74	.....	1.49
Total	413.03	170.74	.....	583.77
No. 16 engine house:				
Carpentering	180.90	93.78	.....	274.68
Painting	12.84	6.17	.....	19.01
Tinning	11.00	6.10	.....	17.10
Plumbing	2.00	7.01	.....	9.01
Heating	.....	2.50	.....	2.50
Total	206.74	115.56	.....	322.30
No. 17 engine house:				
Painting	166.59	75.06	.....	241.65
Tinning	48.45	97.34	.....	145.79
Plumbing	4.38	1.38	.....	5.76
Material drawn by captain	.....	.41	.....	.41
Total	219.42	174.19	.....	393.61
No. 18 engine house:				
Carpentering	155.13	72.76	.....	227.89
Painting	5.84	3.79	.....	9.63
Tinning	16.56	9.47	.....	26.03
Plumbing	4.31	.49	.....	4.80
Total	181.84	86.51	.....	268.35
No. 19 engine house:				
Carpentering	17.84	11.52	.....	29.36
Painting	1.40	.30	.....	1.70
Tinning	8.94	7.49	.....	16.43
Plumbing	8.00	15.97	.....	23.97
Total	36.18	35.28	.....	71.46
No. 20 engine house:				
Carpentering	41.00	13.62	.....	54.62
Tinning	27.20	2.75	.....	29.95
Plumbing	2.25	.72	.....	2.97
Heating	.....	6.50	.....	6.50
Material drawn by captain	.....	8.74	.....	8.74
Total	70.45	32.33	.....	102.78
No. 21 engine house:				
Carpentering	22.88	14.60	.....	37.48
Plumbing	.....	.30	.....	.30
Miscellaneous	16.38	18.17	.....	34.55
Material drawn by captain	.....	1.85	.....	1.85
Total	39.26	34.92	.....	74.18
No. 22 engine house:				
Carpentering	302.82	123.34	.....	426.16
Tinning	10.00	11.38	.....	21.38
Plumbing	16.00	42.18	.....	58.18
Material drawn by captain	.....	2.10	.....	2.10
Total	328.82	179.00	.....	507.82
No. 23 engine house:				
Carpentering	19.00	4.11	.....	23.11
Plumbing	1.50	4.14	.....	5.64
Material drawn by captain	.....	4.11	.....	4.11
Total	20.50	12.36	.....	32.86
No. 24 engine house:				
Material drawn by captain	.....	1.16	.....	1.16

Fire department, District of Columbia, 1912 (repairs to engine houses)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 truck house:				
Tinning	$38.25	$62.50	.....	$100.75
Heating	.31	5.76	.....	6.07
Material drawn by captain	.....	5.45	.....	5.45
Total	38.56	73.71	.....	112.27
No. 2 truck house:				
Carpentering	71.84	31.98	.....	103.82
Painting	7.47	6.77	.....	14.24
Tinning	1.38	.75	.....	2.13
Plumbing	80.69	63.33	.....	144.02
Heating	.50	3.75	.....	4.25
Miscellaneous	8.32	.09	.....	8.41
2 channel beams	.....	.....	$90.00	90.00
Material drawn by captain	.....	5.58	.....	5.58
Total	170.20	112.25	90.00	372.45
No. 3 truck house:				
Carpentering	41.50	24.75	.....	66.25
Painting	2.50	2.46	.....	4.96
Tinning	22.00	16.29	.....	38.29
Plumbing	.42	.....	.....	.42
Miscellaneous	2.25	.....	.....	2.25
Material drawn by captain	.....	3.88	.....	3.88
Total	68.67	47.38	.....	116.05
No. 4 truck house:				
Carpentering	4.81	7.61	.....	12.42
Painting	12.78	7.93	.....	20.71
Tinning	14.70	22.09	.....	36.79
Plumbing	3.94	2.50	.....	6.44
Heating	.....	.50	.....	.50
Material drawn by captain	.....	55.18	.....	55.18
Total	36.23	95.81	.....	132.04
No. 5 truck house:				
Carpentering	55.64	30.29	.....	85.93
Tinning	18.00	18.21	.....	36.21
Plumbing	15.75	7.30	.....	23.05
Heating	63.13	173.82	.....	236.95
Miscellaneous	11.22	10.91	.....	22.13
Total	163.74	240.53	.....	404.27
No. 6 truck house:				
Carpentering	117.09	41.25	.....	158.34
Painting	2.32	1.30	.....	3.62
Tinning	32.19	36.46	.....	68.65
Plumbing	9.75	4.25	.....	14.00
Heating	10.06	15.27	.....	25.33
Total	171.41	98.53	.....	269.94
No. 7 truck house:				
Carpentering	221.38	92.49	.....	313.87
Painting	54.25	15.71	.....	69.96
Tinning	18.63	17.46	.....	36.09
Plumbing	.....	.93	.....	.93
Heating	.....	2.50	.....	2.50
Miscellaneous	3.65	.....	.....	3.65
Total	297.91	129.09	.....	427.00
No. 9 truck house:				
Carpentering	3.69	.....	.....	3.69
Painting	79.63	37.10	.....	116.73
Total	83.32	37.10	.....	120.42
No. 10 truck house:				
Carpentering	47.75	14.21	.....	61.96
Plumbing	3.50	1.73	.....	5.23
Miscellaneous	9.91	3.88	.....	13.79
Material drawn by captain	.....	.87	.....	.87
Total	61.16	20.69	.....	81.85

Fire department, District of Columbia, 1912 (repairs to engine houses)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 chemical house:				
Carpentering	$47.50	$43.95	.....	$91.45
Painting	.38	.07	.....	.45
Plumbing	18.00	42.12	.....	60.12
Material drawn by captain	.....	.21	.....	.21
Total	65.88	86.35	.....	152.23
No. 2 chemical house:				
Plumbing	.....	1.60	.....	1.60
Steamfitting	2.76	43.75	.....	46.51
Material drawn by captain	.....	.41	.....	.41
Total	2.76	45.76	.....	48.52
No. 3 chemical house:				
Carpentering	10.50	13.43	.....	23.93
Painting	2.00	3.09	.....	5.09
Material drawn by captain	.....	.10	.....	.10
Total	12.50	16.62	.....	29.12
No. 5 chemical house:				
Carpentering	95.38	67.12	.....	162.50
Painting	113.63	37.78	.....	151.41
Tinning	25.44	28.36	.....	53.80
Plumbing	153.88	314.93	.....	468.81
Heating	109.01	67.32	.....	176.33
Steamfitting	1.25	.....	.....	1.25
Miscellaneous	20.25	.....	.....	20.25
Material drawn by captain	.....	.40	.....	.40
Total	518.84	515.91	.....	1,034.75

SUMMARY.

Total accounted for on written orders	$11,482.05
Miscellaneous time consumed on written orders in shop and on various engine houses	246.73
Miscellaneous material drawn for use in shop and on various engine houses	23.70
Purchase of forage	89.98
Purchase of horse (prorated)	23.50
Purchase of tires for buggy (prorated)	2.03
Purchase of lathe (prorated)	44.48
Water department's charges for high-pressure service	10.00
Telephone service, superintendent's residence	12.00
Unexpended	65.53
Total	12,000.00

Metropolitan police, District of Columbia, 1911–12 (repairs to stations).

[Appropriation $5,500.]

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 police station:				
Carpentering	$157.84	$70.30	.....	$228.14
Tinning	31.50	50.43	.....	81.93
Painting	92.67	34.42	.....	127.09
Plumbing	16.94	3.87	.....	20.81
Heating	5.57	28.88	.....	34.45
Put iron gratings in transoms	19.00	2.23	.....	21.23
Material drawn by captain	.....	5.73	.....	5.73
Total	323.52	195.86	.....	519.38
No. 2 police station:				
Carpentering	100.60	50.37	.....	150.97
Tinning	60.38	108.38	.....	168.76
Painting	8.39	4.58	.....	12.97
Plumbing	8.25	17.24	.....	25.49
Heating	4.50	7.13	.....	11.63
Total	182.12	187.70	.....	369.82

Metropolitan police, District of Columbia, 1911–12 (repairs to stations)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 3 police station:				
Carpentering	$147.64	$97.40	.....	$245.04
Tinning	37.57	95.06	.....	132.63
Painting	7.90	4.93	.....	12.83
Plumbing	36.44	16.32	.....	52.76
Heating	177.63	213.62	.....	391.25
Material drawn by captain	.....	8.26	.....	8.26
Total	407.18	435.59	.....	842.77
No. 4 police station:				
Carpentering	176.08	148.46	.....	324.54
Tinning	3.50	1.13	.....	4.63
Painting	11.09	6.01	.....	17.10
Plumbing	12.68	2.22	.....	14.90
Heating	.....	26.78	$14.00	40.78
Material drawn by captain	.....	6.50	.....	6.50
Total	203.35	191.10	14.00	408.45
No. 5 police station:				
Carpentering	3.50	1.91	.....	5.41
Tinning	22.75	8.77	.....	31.52
Painting	1.40	.78	.....	2.18
Plumbing	36.00	3.78	.....	39.78
Heating	1.01	4.44	.....	5.45
Steam fitting	1.50	.41	.....	1.91
Total	66.16	20.09	.....	86.25
No. 6 police station:				
Carpentering	179.81	64.90	.....	244.71
Tinning	26.13	58.16	.....	84.29
Painting	8.45	3.54	.....	11.99
Plumbing	.25	4.05	.....	4.30
Heating	2.25	6.20	22.00	30.45
Material drawn by captain	.....	6.33	.....	6.33
Total	216.89	143.18	22.00	382.07
No. 7 police station:				
Carpentering	146.36	89.17	.....	235.53
Tinning	13.76	14.73	.....	28.49
Painting	55.29	25.00	.....	80.29
Plumbing	1.00	.....	.....	1.00
Heating	83.32	160.97	.....	244.29
Material drawn by captain	.....	2.89	.....	2.89
Total	299.73	292.76	.....	592.49
No. 8 police station:				
Carpentering	158.25	97.04	.....	255.29
Tinning	17.00	16.54	.....	33.54
Painting	21.63	12.68	.....	34.31
Plumbing	6.00	.....	.....	6.00
Heating	77.77	167.35	.....	245.12
Material drawn by captain	.....	6.49	.....	6.49
Total	280.65	300.10	.....	580.75
No. 9 police station:				
Carpentering	182.54	245.00	.....	427.54
Tinning	16.82	10.11	.....	26.93
Painting	129.56	47.99	.....	177.55
Plumbing	9.63	.02	.....	9.65
Heating	119.07	178.20	.....	297.27
Material drawn by captain	.....	4.49	.....	4.49
Total	457.62	485.81	.....	943.43
No. 10 police station:				
Carpentering	98.71	44.49	.....	143.20
Tinning	19.32	31.41	.....	50.73
Painting	6.72	2.83	.....	9.55
Plumbing	18.13	5.82	.....	23.95
Steam fitting	3.01	3.13	.....	6.14
Material drawn by captain	.....	7.25	.....	7.25
Total	145.89	94.93	.....	240.82

Metropolitan police, District of Columbia, 1911–12 (repairs to stations)—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 11 police station:				
Carpentering	$18.00	$10.07		$28.07
Tinning	7.94	1.26		9.20
Painting	4.22	1.88		6.10
Plumbing	20.25	59.62		79.87
Heating	35.26	38.33		73.59
Material drawn by captain		4.22		4.22
Total	85.67	115.38		201.05
Substation T:				
Painting	1.40	.78		2.18
Harbor precinct:				
Carpentering			$131.00	131.00
Tinning	4.32	4.35		8.67
Plumbing	.75	.51		1.26
Heating		.43		.43
Total	5.07	5.29	131.00	141.36

SUMMARY.

Total accounted for on written orders	$5,310.82
Miscellaneous time consumed on written orders in shop and on various station houses	85.47
Miscellaneous material drawn for use in shop and on various station houses	11.91
Purchase of forage (prorated)	24.88
Purchase of mules (prorated)	17.60
Purchase of horse (prorated)	9.40
Purchase of tires for buggy (prorated)	1.02
Purchase of lathe (prorated)	22.24
Telephone service, superintendent's residence	12.00
Unexpended	4.66
Total	5,500.00

Public schools, District of Columbia, 1912 (repairs to plumbing).

[Allotment, $23,573.39.]

No.	Name of school.	Labor.	Material.	Contract.	Total.
27	Abbott	$5.75			$5.75
65	Adams	3.50	$1.02		4.52
53	Addison	38.06	9.37		47.43
79	Ambush	12.50	.20		12.70
42	Amidon	2.00			2.00
129	Armstrong Manual Training	33.81	3.90		37.71
70	Arthur	171.22	270.54	$10.00	451.76
39	Bannaker	63.19	133.43		196.62
78	Bell	25.71	3.01		28.72
48	Benning	164.50	151.79		316.29
66	Berret	1.50			1.50
127	Birney	9.75	.45		10.20
50	Blair	76.38	84.75		161.13
61	Blake	29.31	19.96		49.27
145	Blow	9.00			9.00
109	Bowen, A.	1.75			1.75
123	Bowen, S. J.	73.53	188.80		262.33
60	Bradley	6.00	.92		6.92
46	Brent	26.41	30.00		56.41
75	Briggs	29.25	3.03		32.28
104	Brightwood	79.75	173.78		253.53
151	Brightwood Park	31.23	8.09		39.32
103	Brookland	208.66	59.93		268.59
112	Bruce	1.25			1.25
155	Bryan	51.85	48.30		100.15
96	Buchanan	9.75	.96		10.71
144	Business High	67.75	8.07		75.82
58	Carbery	25.38	2.30		27.68
148	Cardoza	10.50	4.60		15.10
43	Central High	174.69	190.19		364.88
113	Chevy Chase	36.19	22.92		59.11
165	Cleveland	.50			.50
30	Cook, J. F.	17.50	3.44		20.94
154	Cooke, H. D.	67.38	126.71		194.09
111	Congress Heights	66.07	31.11	49.00	146.18

Public schools, District of Columbia, 1912 (repairs to plumbing)—Continued.

No.	Name of school.	Labor.	Material.	Contract.	Total.
68	Corcoran	$19.50	$3.11		$22.61
137	Cranch	12.63	1.97		14.60
26	Curtis	23.13	11.81		34.94
52	Dennison	61.75	59.94		121.69
120	Dent	373.35	142.19		515.54
85	Eastern High	80.14	21.32		101.46
160	Eaton	4.88	1.12		6.00
116	Eckington	290.08	235.74		525.82
135	Edmonds	8.75			8.75
133	Emery	67.63	77.61		145.24
92	Fillmore	49.47	8.55		58.02
32	Force	37.97	8.48		46.45
15	Franklin	77.25	34.39		111.64
141	French, B. B	15.75	3.21		18.96
143	Gage	5.69			5.69
36	Gales	245.43	358.07		603.50
34	Garnet	328.81	216.47		545.28
76	Garrison	16.15	5.21		21.36
68	Giddings	11.00	2.23		13.23
41	Grant	963.46	922.78	$49.00	1,935.24
105	Greenleaf	1.00			1.00
37	Hamilton	6.56	.37		6.93
84	Harrison	2.56			2.56
107	Hayes	20.88	6.60		27.48
38	Henry	101.26	87.78		189.04
115	Hilton	9.38	2.06		11.44
119	Hubbard	10.75	1.68		12.43
147	Hyde	65.75	24.30		90.05
69	Jackson	9.82	.68		10.50
23	Jefferson	109.25	112.65		221.90
95	Johnson	5.75	.15		5.90
21	Johnson Ax	1.75	.19		1.94
77	Jones	1.50	.56		2.06
128	Kenilworth	70.56	139.36		209.92
149	Ketcham	12.25	.53		12.78
108	Langdon	34.75	8.77		43.52
132	Langston	3.25	3.00		6.25
67	Lenox	1.25	.42		1.67
18	Lincoln	35.53	89.66		125.19
90	Logan	18.82	1.76		20.58
124	Lovejoy	9.75	.51		10.26
142	Ludlow	7.50			7.50
130	McKinley	68.26	53.07		121.33
16	McCormick	2.50	1.75		4.25
82	M Street High	124.02	23.71		147.73
	M Street power plant	33.50	18.07		51.57
71	Madison	12.50	2.21		14.71
62	Magruder	32.00	17.65		49.65
55	Maury	56.06	77.48		133.54
8	Military Road	12.75	.94		13.69
72	Monroe	27.48	14.22		41.70
140	Montgomery	319.69	205.44		525.13
125	Morgan	3.69	.74		4.43
44	Morse	8.00	1.25		9.25
40	Mott (old)	3.25			3.25
153	Mott (new)	16.44	1.38		17.82
122	Orr	233.21	133.39		366.60
93	Patterson	5.25	.83		6.08
98	Payne	4.75	1.38		6.13
31	Peabody	78.38	130.53		208.91
131	Petworth	84.53	23.22		107.75
57	Phelps	26.19	2.93		29.12
81	Phillips	4.50			4.50
94	Pierce	2.50	.91		3.41
86	Polk	3.50	.50		4.00
159	Potomac (new)	18.58	2.43		21.01
157	Powell	1.00	.28		1.28
28	Randall	25.47	7.64		33.11
110	Reservoir	6.50	1.75		8.25
146	Ross	3.50			3.50
22	Seaton	3.75			3.75
134	Simmons	264.71	186.74		451.45
80	Slater	2.75	.39		3.14
64	Smallwood	6.50	2.40		8.90
97	Stevens	25.63	4.50		30.13
19	Sumner	77.94	111.15		189.09
126	Syphax	17.31	1.83		19.14
118	Takoma	13.25	2.88		16.13
88	Taylor	25.25	30.99		56.24
102	Tenley	25.50	9.39		34.89
29	Thomson	10.75	29.22		39.97
14	Threlkeld	13.25	1.19		14.44

Public schools, District of Columbia, 1912 (repairs to plumbing)—Continued.

No.	Name of school.	Labor.	Material.	Contract.	Total.
114	Toner	$48.63	$37.34	.....	$85.97
59	Towers	9.00	1.00	.....	10.00
45	Twining	25.88	7.72	.....	33.60
83	Tyler	7.50	2.46	.....	9.96
87	Van Buren	63.32	18.12	.....	81.44
150	Van Ness	3.25	.....	.....	3.25
4	Wallach	25.00	10.37	.....	35.37
121	Webb	20.25	7.36	.....	27.61
51	Webster	3.00	.....	.....	3.00
54	Weightman	66.84	99.37	.....	166.21
117	Western High	303.94	141.69	$3,374.00	3,819.63
136	Wheatley	13.00	4.23	.....	17.23
89	Wilson	42.13	125.52	.....	167.65
101	Woodburn	121.69	98.99	.....	220.68
49	Wormley	16.25	2.86	.....	19.11

Two hundred closets were bought under contract for the following schools and are to be installed during the next fiscal year:

	Number.	Price.
Birney	18	$450.00
Bradley	18	450.00
Bowen, S. J.	22	550.00
Emery	15	375.00
Gales	22	550.00
Hubbard	13	325.00
Langston	16	400.00
Petworth	12	300.00
Randall	17	425.00
Stevens	25	625.00
Takoma	17	425.00
5 closets delivered to shop (for various schools)	5	125.00

SUMMARY.

Total amount accounted for on written orders	$21,658.72
Miscellaneous time consumed on written orders in shop and on various schools	1,146.44
Miscellaneous material drawn for use in shop and on various schools	132.78
Horseshoeing	47.75
Purchase of forage	171.08
Purchase of lathe (prorated)	88.96
Purchase of tires for buggy (prorated)	3.81
Unexpended	323.90
Total	23,573.39

Public schools, District of Columbia, 1911–12, repairs to buildings, fire protection, etc.

[Appropriation, $37,500.]

Name of school.	Labor.	Material.	Contract.	Total.
Adams	$81.99	$82.34	.....	$164.33
Addison	460.37	266.54	.....	726.91
Ambush	52.12	26.80	.....	78.92
Amidon	17.94	4.09	.....	22.03
Armstrong Manual Training	4.25	6.97	.....	11.22
Arthur	23.25	21.49	.....	44.74
Banneker	23.25	11.16	.....	34.41
Bell	94.59	38.25	.....	132.84
Benning	84.51	15.36	.....	99.87
Berret	.50	.07	.....	.57
Birney	46.37	68.24	.....	114.61
Blair	1,074.92	531.82	$45.50	1,652.24
Blake	36.94	19.51	.....	56.45
Blow	16.44	4.97	.....	21.41
Bowen, A.	4.00	1.11	.....	5.11
Bowen, S. J.	61.16	27.95	.....	89.11
Bradley	431.14	190.27	.....	621.41
Brent	285.35	218.28	.....	503.63
Briggs	110.94	43.08	.....	154.02
Brightwood	196.28	63.33	.....	259.61

Public schools, District of Columbia, 1911–12, repairs to buildings, fire protection, etc.—Continued.

Name of school.	Labor.	Material.	Contract.	Total.
Brightwood Park	$50.50	$13.51		$64.01
Brookland	20.18	2.59		22.77
Bruce	41.12	13.72		54.84
Bryan	377.71	139.30		517.01
Bunker Hill Road	17.97	2.06		20.03
Business High	169.69	91.32		261.01
Carbery	10.00	7.55		17.55
Cardoza	1.00	3.82		4.82
Central High	116.56	67.29		183.85
Chain Bridge	13.50	4.36		17.86
Chevy Chase	783.04	355.68	$265.00	1,403.72
Cleveland	1.50	.25		1.75
Conduit Road	2.50	1.91		4.41
Congress Heights	670.67	273.59		944.26
Cook, J. F	5.50	1.48		6.98
Cooke, H. D	29.00	.67		29.67
Corcoran	2.06	.10		2.16
Cranch	2.50			2.50
Curtis	164.32	106.17		270.49
Deanwood	22.85	7.47		30.32
Dennison	14.06	21.72		35.78
Dent	47.82	36.89	160.00	244.71
Douglas	3.00	2.25		5.25
Eastern High	177.41	51.83		229.24
Eckington	363.51	247.51		611.02
Edmonds	10.56	5.92	68.00	84.48
Emery	18.81	11.87		30.68
Fillmore	33.39	31.63		65.02
Force	65.62	34.47		100.09
Franklin	547.95	169.13		715.08
French, B. B	1.00	.01		1.01
Gage	103.29	25.13		128.42
Gales	80.94	16.27		97.21
Garnet	387.67	99.97		487.64
Garfield	37.50	6.49		43.99
Garrison	55.99	26.07		82.06
Giddings	219.19	109.05		328.24
Good Hope		10.96		10.96
Grant	185.45	67.56		253.01
Build new coal vault			1,695.00	1,695.00
Greenleaf	14.00	21.22		35.22
Hamilton	13.00	7.01		20.01
Harrison	7.82	11.34		19.16
Henry	412.75	207.71		620.46
Hilton	4.15			4.15
Hubbard	14.25	3.94		18.19
Hyde	68.13	27.57	58.00	153.70
Jackson	43.72	21.84		65.56
Jefferson	450.17	157.36		607.53
Johnson	28.38	9.20		37.58
Jones	154.96	80.58		235.54
Johnson Annex	.50	.06		.56
Kenilworth	51.53	11.87		63.40
Ketcham	7.88	4.57		12.45
Langdon	456.06	274.63		730.69
Langston	442.15	312.45		754.60
Lenox	2.63	2.89		5.52
Lincoln	15.99	14.56		30.55
Logan	3.87	2.61		6.48
Lovejoy	28.14	25.30		53.44
Ludlow	3.50	18.95		22.45
M Street High	115.98	77.47		193.45
M Street heating plant	4.81	2.75		7.56
Madison	96.68	46.95		143.63
Magruder	117.30	64.78		182.08
Maury	16.00	5.07		21.07
McKinley	304.89	114.95	214.00	633.84
Monroe	11.44	6.60		18.04
Montgomery	475.86	216.93		692.79
Morgan	299.42	175.91		475.33
Morse	248.88	124.68		373.56
Mott (new)	178.31	76.64		254.95
Orr	7.00	11.39		18.39
Patterson	11.57	3.54		15.11
Payne	70.59	13.17		83.76
Peabody	69.24	123.65		192.89
Petworth	1,027.37	490.96		1,518.33
Phelps	10.06	4.35		14.41
Phillips	41.85	19.32		61.17
Pierce	18.00	6.34		24.34
Polk	39.32	7.41		46.73

Public schools, District of Columbia, 1911–12, repairs to buildings, fire protection, etc.—Continued.

Name of school.	Labor.	Material.	Contract.	Total.
Powell	$8.00	$1.66		$9.66
Randall	1.50	5.38		6.88
Reno	43.69	10.67		54.36
Ross	4.50	1.37		5.87
Seaton	14.80	3.02		17.82
Simmons	325.65	131.11		456.76
Slater	150.83	69.10		219.93
Smallwood	306.22	140.96		447.18
Stanton	6.44	6.43		12.87
Stevens	20.13	10.96		31.09
Sumner	39.78	7.77		47.55
Syphax	37.75	24.27		62.02
Takoma	25.00	3.69		28.69
Taylor	13.00	4.84		17.84
Tenley	928.35	349.53		1,277.88
Threlkeld	293.55	142.48		436.03
Thomson	45.44	25.05		70.49
Toner	27.52	7.12		34.64
Towers	1.50	.30		1.80
Twining	161.55	440.05		601.60
Tyler	9.00	6.86		15.86
Van Buren	713.65	375.75		1,089.40
Van Ness	7.09	6.30		13.39
Wallach	206.72	115.97		322.69
Webb	10.50	8.15		18.65
Webster	26.35	16.33		42.68
Weightman	360.62	106.28		466.90
Western High	1,529.95	936.00		2,465.95
Wheatley	32.94	17.13		50.07
Wisconsin Avenue Manual Training	16.00	3.20		19.20
Woodburn	20.44	6.70		27.14
Wormley	380.06	190.32		570.38

SUMMARY.

Total accounted for on written orders	$31,314.28
Miscellaneous time consumed on written orders in shop and on various schools	3,926.77
Miscellaneous material drawn for use in shop and on various schools	1,431.18
Purchase of forage	214.56
Horseshoeing	63.50
Purchase of mules (prorated)	105.60
Purchase of horse (prorated)	70.50
Allotted to sand wharf	48.67
Drilling holes in eye beams	4.50
Purchase of tires for buggy (prorated)	6.35
Purchase of 1,000-gallon gasoline tank	154.60
Purchase of lathe (prorated)	139.00
Unexpended	20.49
Total	37,500.00

Courts, District of Columbia, 1911–12, police court, repairs to building.

[Appropriation, $1,000.]

Class of work.	Labor.	Material.	Contract.	Total.
Carpentering	$23.12	$0.90		$24.02
Painting	477.31	(1)		477.31
Tinning	28.99	6.81		35.80
Steamfitting	88.31	24.28		112.59
Plumbing	3.00	1.67		4.67
Material furnished engineer		6.95		6.95
Total	620.73	40.61		661.34

[1] Material used was bought out of the appropriation for 1910–11.

SUMMARY.

Total accounted for	$661.34
Purchase of iron gate (contract)	284.00
Purchase of motor (contract)	50.00
Unexpended	4.66
Total	1,000.00

Contingent and miscellaneous expenses, District of Columbia, 1911–12, motor truck.

[Appropriation, $2,500.]

Purchase of motor-truck chassis	$1,550.00
Equipment and maintenance	937.73
Total	2,487.73
Unexpended	12.27
Total	2,500.00

Expended from various allotments made to this office from other departments of the District of Columbia for repairs to their respective buildings during the fiscal year 1911–12 ..... 12,584.82

Report of inspection of steam boilers, public schools, 1911–12.

School.	Boilers.	High pressure.	Low pressure.	Length.	Diameter.	Tubes.	Size of tubes.	Manholes.	Size of manholes.	Tested.	Safety blows.	Date of inspection.	Remarks.
				Ft.	*In.*		*In.*		*Inches.*				
Armstrong Manual Training.	2	2	..	15½	....	56	3½	1	11 by 15	170	110	Aug. 20	Shells and tubes in good condition.
Business High	3	1	..	16	66	66	3	2	12 by 16	160	85	July 19	Do.
Do	..	2	..	16	66	66	3	2	12 by 16	160	85	...do	Relined fire boxes and cleaned smoke stacks.
Do	..	3	..	16	66	66	3	2	12 by 16	160	85	...do	
Brookland	2	1	..	12	42	52	3	1	11 by 15	100	50	July 27	Retubed 1 boiler and replaced 2 tubes in high-pressure boiler.
Do	..	..	1	12	42	38	3	1	11 by 15	70	30	...do	
Brightwood	1	..	1	12	42	43	3	1	11 by 15	60	25	July 28	Shells in good condition.
Bowen, S. J.	1	1	..	14	54	64	3	1	11 by 15	100	50	July 20	Repaired boiler with patch.
Central High	4	..	3	12	52	64	3	1	11 by 15	100	25	June 15	Shells in good condition.
Do	..	[1] 1	..	....	....	....	....	..	.....	....	....	.....	
Cranch	2	..	2	10	42	38	3	1	11 by 15	60	40	July 26	Retubed both boilers.
Curtis	2	..	2	12	54	65	3	2	11 by 15	60	25	July 29	New stem on handhold plate.
Dennison	2	..	2	10	42	49	3	2	11 by 15	110	25	June 14	Shells in good condition.
Eastern High	2	..	2	14	48	54	3	2	11 by 15	100	25	Sept. 1	2 new boilers.
Emery	2	..	2	14	54	54	3	1	11 by 15	65	35	July 28	Shells and tubes in good condition.
Force	2	..	2	12	42	46	3	1	11 by 15	70	30	May 23	Do.
Franklin	2	..	2	12	48	48	3	1	11 by 15	60	30	July 6	Do.
Gales	2	..	2	10	42	49	3	1	11 by 15	65	30	June 21	Retubed both boilers.
Garnet	2	..	2	12	42	46	3	1	11 by 15	60	30	June 15	Replaced 3 defective tubes.
Grant	2	..	2	10	42	42	3	1	11 by 15	65	60	May 25	Relined fire box.
Henry	2	..	2	12	46	42	3	1	11 by 15	70	25	June 17	Retubed north boiler.
Jefferson	2	2	..	12	42	46	3	1	11 by 15	65	25	June 29	Relined fire box.
Lincoln	2	..	2	10	42	38	3	1	11 by 15	60	30	July 14	Do.
M Street heating plant.	2	2	..	21	48	139	4	2	11 by 15	180	125	Aug. 4	Gears on stoker shaft.
McKinley Manual Training.	6	6	..	....	....	....	....	..	.....	[2] 165	110	Dec. 11	
Do	..	..	..	....	....	....	....	..	.....	[3] 170	110	.....	
Do	..	..	..	....	....	....	....	..	.....	[4] 180	115	.....	
Do	..	..	..	....	....	....	....	..	.....	[5] 185	115	.....	
Do	..	..	..	....	....	....	....	..	.....	[6] 187	125	.....	
Peabody	2	..	2	14	54	54	3	1	11 by 15	60	35	July 26	Shells and tubes in good condition.
Stevens	2	..	2	12	42	46	3	1	11 by 15	65	30	May 19	Retubed south boiler.
Seaton	2	..	2	10	42	40	3	2	11 by 15	70	30	June 19	Shells and tubes in good condition.
Sumner	2	..	2	12	48	54	3	1	11 by 15	65	30	May 23	Do.
Syphax	1	1	..	14	54	52	3	1	11 by 15	100	50	July 20	New buck stay rods.
Tenley	1	..	1	10	45	46	3	1	11 by 15	70	30	July 31	Shells and tubes in good condition.
Wallach	2	..	2	12	46	52	3	1	11 by 15	40	30	July 10	
Webster	2	..	2	14	54	54	3	1	11 by 15	60	25	June 6	Removed walls to expose shell for inspection.
Western High	2	2	..	16	60	82	3	2	11 by 15	100	50	Sept. 6	1 set of grate bars and repaired arches in rear combustion chamber.

[1] 25 horsepower upright.
[2] Boiler No. 1.
[3] Boiler No. 2.
[4] Boiler No. 3.
[5] Boiler No. 4.
[6] Boilers Nos. 5 and 6.

REPORT OF THE INSPECTOR OF GAS AND METERS.

WASHINGTON, D. C., *September 17, 1912.*

SIR: I have the honor to transmit herewith a report of the work of this office during the fiscal year ended June 30, 1912.

In compliance with the legal regulations, daily determinations were made of candle-power and purity of the illuminating gas supplied by the two gas companies. For convenience in making the required tests, four testing stations are maintained in the District of Columbia, one at No. 1226 Wisconsin Avenue, in the territory supplied by the Georgetown Gas Light Co. and known as the Georgetown testing station, and three in the territory supplied by the Washington Gas Light Co.; the northwest station, at No. 1405½ Fourteenth Street NW.; the southeast station, at No. 500 D Street SE.; and the central station and office headquarters, at the northeast corner of Tenth and D Streets NW.

For several years the gas supplied by the Georgetown Gas Light Co. has been a coal gas enriched with oil gas. This company installed a water-gas outfit in November, 1911, and since that date their product has been coal gas containing a variable amount of carbureted water gas. The Washington Gas Light Co. has continued to supply a mixture of coal gas and carbureted water gas.

WASHINGTON GAS LIGHT CO.

ILLUMINATING POWER.

During the past year 804 official photometric tests were made of the gas supplied by the Washington Gas Light Co., yielding a mean of 22.66 candles, which was 0.66 of a candle above the minimum illuminating power allowed by law. The highest result obtained was 26.42 candles, at the southeast station, on November 21, 1911, and the lowest was 16.83 candles, at the northwest station, on December 15, 1911.

Three hundred and six determinations at the central station gave a mean of 22.52 candles, with a maximum of 25.24 candles, on January 11, 1912, and a minimum of 18.83 candles, on November 16, 1911.

The mean of 249 determinations at the southeast station was 22.64 candles, with a maximum of 26.42 candles, on November 21, 1911, and a minimum of 18.22 candles, on November 8, 1911.

Two hundred and forty-nine determinations at the northwest station gave a mean of 22.86 candles, with 25.98 candles as a maximum result, on May 6, 1912, and 16.83 candles as a minimum, on December 15, 1911.

On 43 days during the year the illuminating power was below the legal standard of 22 candles at some time during the day at some one testing station; on 23 days it was below at two stations, and on 6 days it was below at the three stations. On most of these days the lowest result obtained was between 21 and 22 candles.

PURITY.

Ammonia.—The mean amount of ammonia found in the gas at the central station was 0.08 grains in 100 cubic feet, with 1.36 grains, on June 29, 1912, as the maximum amount. On 205 days the tests showed no ammonia present in the gas at this station. At the southeast station the average amount of ammonia found in the gas was 0.35 grains, and the largest amount found was 1.80 grains, on July 5, 1911. On 38 days the tests failed to show the presence of any ammonia in the gas at the southeast station.

Sulphur.—At the central station the mean amount of sulphur found in the gas was 6.80 grains in 100 cubic feet, with a maximum of 9.02 grains, on May 11, 1912, and a minimum of 3.82 grains, on April 4, 1912. The mean sulphur content of the gas at the southeast station was 6.10 grains in 100 cubic feet, with 8.41 grains as a maximum, on July 11, 1911, and a minimum of 4.02 grains, on April 18, 1912.

Throughout the year the amount of ammonia and sulphur present in the gas was well within the maximum limits allowed by law.

Hydrogen sulphide.—On 56 days this impurity was present in the gas at one or more testing stations. The greater number of these tests showing the presence of hydrogen sulphide were obtained during the months of December and January, the time of heaviest gas output.

PRESSURE.

A record of the gas pressure in the street mains was obtained by means of a pressure-recording instrument at each testing station. The mean and extreme pressures thus obtained are as follows:

Station.	Mean.	Maximum.	Minimum.
	Inches.	*Inches.*	*Inches.*
Central	2.82	4.88	1.80
Southeast	3.49	5.90	1.90
Northwest	3.29	4.90	2.22

SPECIFIC GRAVITY.

From time to time specific-gravity determinations were made of the gas compared with air as 1.000, for the purpose of record, although it is admitted that the specific-gravity figures are not a reliable indication of the quality of a mixed gas.

The following table shows the means and extremes of the specific-gravity determinations at the three stations:

Station.	Mean.	Maximum.	Minimum.
Central	0.656	0.670	0.647
Southeast	.654	.670	.636
Northwest	.641	.682	.614

GEORGETOWN GAS LIGHT CO.

ILLUMINATING POWER.

Three hundred and five official photometric determinations of the gas supplied by this company gave a mean of 22.63 candles, with a maximum of 25.64 candles, on December 6, 1911, and a minimum of 17.56 candles, on June 8, 1912.

On 37 days during the year the illuminating power of the gas supplied by this company was below the legal standard of 22 candles at some time during the day.

PURITY.

Ammonia.—The mean amount of ammonia found in the gas supplied by this company was 1.15 grains in 100 cubic feet of gas, with 4.31 grains as the maximum amount, on July 31, 1911. On 25 days the tests showed no ammonia present in the gas.

Sulphur.—The mean sulphur content of the gas was 9 grains in 100 cubic feet, with a maximum of 17.60 grains, on July 17, 1911, and a minimum of 4.90 grains, on September 13, 1911. At all times during the year the amount of ammonia and sulphur found in the gas supplied by this company was well within the maximum limits fixed by law.

Hydrogen sulphide.—This impurity was found to be present in the gas on 37 days during the year. These days occurred during the months of March, May, and June.

PRESSURE.

The mean pressure of the gas in the mains as recorded at the Georgetown testing station was 2.64 inches, with a maximum of 4.76 inches, and a minimum of 1 inch.

SPECIFIC GRAVITY.

A number of determinations of the specific gravity of the gas gave a mean of 0.598, with 0.612 as a maximum, and 0.584 as a minimum result.

METER INSPECTIONS.

During the year just passed this office inspected and proved 21,379 gas meters, an increase of more than 100 per cent over the highest number inspected in any preceding year. Seven thousand one hundred and seventy-four were new meters, 11,985 repaired meters, and 2,220 complaint meters; that is, were inspected upon request of either a consumer or the gas company.

This great increase in the number of meters inspected was undoubtedly due, in a slight degree, to the natural growth of the city in population, but the greater part of the increase resulted from the inauguration by the Washington Gas Light Co., something over a year ago, of a policy of removing for inspection all gas meters that have been in continuous service for more than three years. The benefits to the consumers

resulting from this practice are evident already in a marked decrease in the number of complaints received by this office from gas consumers.

Of 906 meters examined in response to requests made by consumers supplied by the Washington Gas Light Co., 457, or 50.44 per cent, were found to register fast, average error 5.24 per cent; 65, or 7.17 per cent, were slow, average error 5.27 per cent; 383, or 42.27 per cent, registered within the limits allowed by law, and were pronounced correct, and 1 failed to register the gas passing through it.

One thousand two hundred and nineteen consumers' meters were examined on request of the Washington Gas Light Co. Of these meters, 40, or 3.28 per cent, were fast, average error 4.28 per cent; 778, or 63.82 per cent, were slow, average error 20.43 per cent; 26, or 2.13 per cent, were correct; and 375, or 30.76 per cent, failed to register.

Eighty-five meters were inspected on request of consumers supplied by the Georgetown Gas Light Co. Of this number, 33, or 38.82 per cent, were fast, average error 5.29 per cent; 8, or 9.41 per cent, were slow, average error 6.12 per cent; and 44, or 51.76 per cent, registered correctly according to law.

Of 10 consumers' meters inspected for the Georgetown Gas Light Co., 3 were found to register fast, average error 4.89 per cent; 2 were slow, average error 4.50 per cent; and 5 were correct.

FEES COLLECTED.

The law directs that an inspection fee of 50 cents be collected by this office for each new or complaint meter inspected, and 20 cents for each repaired meter. The fees thus collected during the past year amounted to $7,090, which sum was deposited with the collector of taxes, as required by the statutes.

DISTRICT GAS BILLS.

One of the duties which falls to this office is the verification of the monthly statements of all gas meters supplying buildings occupied by any branch of the District government and the certification of the resulting gas bills.

It would have been impossible to have successfully met the greatly increased demand for work required of this office during the year just passed had it not been for the loyal assistance of my associates in this office—an able and enthusiastic assistance, in fact, that knew no limit of official hours whenever there was work to be performed.

Respectfully submitted.

ELMER G. RUNYAN,
Inspector of Gas and Meters.

Maj. E. M. MARKHAM,
Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner,
District of Columbia.

TABLE I.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1911, to June 30, 1912 (central testing station).*

Month.	Observations.[1]	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July	25	22.41	23.67	21.28	0.14	0.44	None.	7.78	8.52	6.57	.....
August	27	22.62	23.75	22.05	.13	.27	None.	7.25	7.92	5.20	.....
September	25	22.15	23.82	19.18	.10	.36	None.	7.52	8.49	6.70	.....
October	26	21.75	22.87	20.49	.07	.52	None.	7.68	8.47	6.40	.....
November	25	21.34	23.80	18.83	.04	.26	None.	7.14	8.18	6.11	2
December	25	22.52	24.37	20.81	.03	.13	None.	7.81	8.40	7.32	19
January	26	22.88	25.24	20.49	.06	.74	None.	6.95	8.40	5.43	10
February	24	22.96	25.23	21.04	.06	.74	None.	5.77	8.22	4.56	3
March	26	22.67	24.20	20.87	.03	.37	None.	5.51	7.13	4.44	2
April	26	22.83	24.51	20.41	.04	.48	None.	5.61	6.94	3.82	8
May	26	23.21	24.61	21.03	.05	.40	None.	6.69	9.02	4.72	.....
June	25	22.88	23.77	21.13	.17	1.36	None.	6.43	7.15	5.03	.....
For the year	306	22.52	25.24	18.83	.08	1.36	None.	6.80	9.02	3.82	44

[1] Each observation consists of 10 readings on the Bunsen photometer at intervals of 1 minute.

TABLE II.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1911, to June 30, 1912 (southeast testing station).*

Month.	Observations.[1]	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July	21	22.64	24.61	21.38	0.89	1.80	0.30	7.41	8.41	6.21	.....
August	22	22.40	23.33	20.96	.54	1.37	None.	6.62	8.08	5.41	.....
September	21	22.23	23.78	20.04	.39	1.50	None.	6.25	7.14	5.34	.....
October	25	22.71	25.49	20.18	.34	1.10	None.	6.19	6.94	4.82	1
November	25	22.44	26.42	18.22	.06	.25	None.	5.92	6.44	5.49	1
December	20	23.01	26.08	20.61	None.	None.	None.	6.80	7.25	6.05	5
January	21	23.21	25.08	21.34	.15	.65	None.	5.91	7.30	4.95	4
February	19	22.44	23.46	21.22	.47	1.45	None.	4.88	5.40	4.70	4
March	19	22.61	24.62	21.05	.21	.45	None.	4.98	5.32	4.65	2
April	19	22.54	24.26	20.04	.15	1.05	None.	5.35	6.67	4.02	7
May	19	22.94	25.15	21.01	.56	.68	.44	7.11	7.14	7.08	3
June	18	22.50	23.63	20.84	.90	1.05	.75	6.57	6.98	6.15	.....
For the year	249	22.64	26.42	18.22	.35	1.80	None.	6.10	8.41	4.02	27

[1] Each observation consists of 10 readings on the Bunsen photometer at intervals of 1 minute.

TABLE III.—*Illuminating power and purity of the gas supplied by the Washington Gas Light Co. from July 1, 1911, to June 30, 1912 (northwest testing station).*

Month.	Observations.[1]	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July	18	23.22	24.82	20.73	.....	.....	.....	.....	.....	.....	.....
August	21	23.27	25.69	22.02	.....	.....	.....	.....	.....	.....	.....
September	22	22.41	24.35	20.60	.....	.....	.....	.....	.....	.....	.....
October	24	22.71	24.91	19.29	.....	.....	.....	.....	.....	.....	.....
November	25	22.84	24.89	19.48	.....	.....	.....	.....	.....	.....	.....
December	22	22.52	25.06	16.83	.....	.....	.....	.....	.....	.....	2
January	23	22.89	23.95	20.46	.....	.....	.....	.....	.....	.....	1
February	19	22.91	24.64	20.77	.....	.....	.....	.....	.....	.....	.....
March	20	22.94	25.45	19.73	.....	.....	.....	.....	.....	.....	.....
April	20	22.30	24.84	18.33	.....	.....	.....	.....	.....	.....	.....
May	16	23.40	25.98	21.31	.....	.....	.....	.....	.....	.....	.....
June	19	23.19	25.74	19.15	.....	.....	.....	.....	.....	.....	.....
For the year	249	22.86	25.98	16.83	.....	.....	.....	.....	.....	.....	3

[1] Each observation consists of 10 readings on the Bunsen photometer at intervals of 1 minute.

TABLE IV.—*Illuminating power and purity of the gas supplied by the Georgetown Gas Gas Light Co. from July 1, 1911, to June 30, 1912 (Georgetown testing station).*

Month.	Observations.[1]	Illuminating power in sperm candles.			Grains of ammonia in 100 cubic feet.			Grains of sulphur in 100 cubic feet.			Number of days hydrogen sulphide was present.
		Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	
July	25	22.61	24.03	20.29	2.90	4.31	1.65	10.62	17.60	8.28	.....
August	27	22.92	24.21	22.08	2.81	3.92	2.12	6.99	8.85	5.32	.....
September	25	22.41	24.06	20.35	1.12	2.68	None.	6.00	7.32	4.90	.....
October	26	22.68	24.01	21.64	.69	1.52	None.	8.46	9.44	7.75	.....
November	25	22.69	25.31	20.31	1.25	4.25	None.	11.02	13.33	9.46	.....
December	25	22.89	25.64	20.88	.34	1.71	None.	8.06	10.03	6.17	.....
January	26	22.93	24.14	19.85	.67	1.71	None.	10.07	11.38	9.13	.....
February	23	22.56	23.67	21.12	.30	1.00	None.	10.60	13.38	8.80	.....
March	26	22.75	25.55	20.08	.73	1.30	None.	10.44	11.43	9.21	16
April	26	22.74	24.13	20.45	.35	1.28	None.	9.42	11.14	7.02	.....
May	26	22.54	24.10	21.43	1.39	2.12	.66	9.21	9.70	8.71	6
June	25	21.82	23.74	17.56	.79	1.32	None.	7.71	8.67	5.84	15
For the year	305	22.63	25.64	17.56	1.15	4.31	None.	9.00	17.60	4.90	37

[1] Each observation consists of 10 readings on the Bunsen photometer at intervals of 1 minute.

TABLE V.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the central testing station from July 1, 1911, to June 30, 1912.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	Inches.	*Inches.*	*Inches.*
July	2.64	3.40	1.96
August	2.60	3.80	1.80
September	2.55	3.10	1.98
October	2.66	3.34	1.96
November	2.75	3.40	2.06
December	2.92	4.04	1.84
January	3.01	4.88	1.98
February	3.03	4.32	1.98
March	2.92	4.12	1.82
April	2.99	4.80	1.96
May	2.88	4.06	1.96
June	2.88	3.82	2.00
For the year	2.82	4.88	1.80

TABLE VI.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the southeast testing station from July 1, 1911, to June 30, 1912.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	Inches.	*Inches.*	*Inches.*
July	3.13	3.90	2.20
August	3.12	4.40	1.90
September	2.98	3.70	2.30
October	3.08	3.94	2.18
November	3.37	4.32	2.56
December	3.48	4.80	2.40
January	3.77	5.50	2.40
February	3.75	5.30	2.40
March	3.78	5.90	2.20
April	3.88	5.60	2.40
May	3.78	5.50	2.40
June	3.71	5.10	2.40
For the year	3.49	5.90	1.90

TABLE VII.—*Pressure of the gas supplied by the Washington Gas Light Co., as registered at the northwest testing station from July 1, 1911, to June 30, 1912.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	Inches.	*Inches.*	*Inches.*
July	3.18	4.00	2.44
August	3.13	4.10	2.34
September	3.11	3.90	2.36
October	3.11	4.00	2.38
November	3.34	4.56	2.34
December	3.44	4.70	2.28
January	3.52	4.90	2.44
February	3.50	4.84	2.46
March	3.34	4.70	2.22
April	3.28	4.44	2.24
May	3.19	4.20	2.38
June	3.28	4.40	2.40
For the year	3.29	4.90	2.22

TABLE VIII.—*Pressure of the gas supplied by the Georgetown Gas Light Co., as registered at the Georgetown testing station from July 1, 1911, to June 30, 1912.*

Month.	Mean pressure.	Maximum pressure.	Minimum pressure.
	Inches.	*Inches.*	*Inches.*
July	2.10	3.36	1.02
August	2.24	4.02	1.08
September	2.14	3.62	1.00
October	2.84	4.48	1.18
November	2.89	4.40	1.50
December	2.62	4.40	1.08
January	2.53	4.04	1.00
February	3.27	4.76	1.70
March	3.15	4.70	1.56
April	2.50	3.80	1.16
May	.....	.....	.....
June	2.79	4.40	1.32
For the year	2.64	4.76	1.00

TABLE IX.—*Meters inspected and proved for the Washington Gas Light Co. and for consumers of gas in Washington, from July 1, 1911, to June 30, 1912.*

Month.	Meters tested.	New meters for company.						Repaired meters for company.							Consumers' meters on complaint of consumers.							Consumers' meters on complaint of company.						
			Fast.		Slow.				Fast.		Slow.					Fast.		Slow.					Fast.		Slow.			
		Number.	Number.	Per cent.	Number.	Per cent.	Correct.	Number.	Number.	Per cent.	Number.	Per cent.	Did not register.	Correct.	Number.	Number.	Per cent.	Number.	Per cent.	Did not register.	Correct.	Number.	Number.	Per cent.	Number.	Per cent.	Correct.	Did not register.
July	1,157	505	1	3.00	1	13.33	503	512	....	.....	6	5.74	....	506	20	5	4.00	....	.....	....	15	120	....	.....	87	21.44	....	33
August	1,026	406	....	.....	1	5.00	405	462	....	.....	4	10.70	....	458	18	7	3.52	1	3.33	....	10	140	1	3.00	106	21.98	4	29
September	1,299	770	5	4.03	....	.....	765	463	1	3.33	2	4.16	....	460	18	2	4.00	2	5.00	....	14	48	....	.....	37	18.95	....	11
October	1,642	915	22	3.71	....	.....	893	659	4	4.49	7	3.99	1	647	35	7	4.81	7	6.99	....	21	33	3	4.00	14	21.95	1	15
November	1,457	800	9	3.46	2	18.50	789	558	3	4.44	....	.....	1	554	81	22	4.65	13	4.68	....	46	18	....	.....	8	32.78	2	8
December	1,400	515	3	3.77	....	.....	512	725	1	5.33	3	8.72	....	721	96	53	5.12	10	5.24	....	33	64	2	3.00	28	23.65	2	32
January	1,772	712	13	3.77	....	.....	699	902	6	4.08	5	5.63	....	891	81	57	5.04	4	3.71	....	20	77	2	4.16	34	25.78	....	41
February	1,859	450	1	3.66	1	14.66	448	1,186	6	6.10	2	4.33	....	1,178	148	112	5.69	3	4.44	....	33	75	4	4.91	36	23.65	1	34
March	2,573	791	2	4.25	1	22.66	788	1,380	....	.....	2	4.83	....	1,378	172	106	5.49	8	6.92	....	58	230	16	4.41	139	18.17	2	73
April	2,222	402	2	5.00	....	.....	400	1,570	1	5.00	7	6.57	....	1,562	95	44	5.21	5	5.94	1	45	155	5	4.44	105	19.25	3	42
May	2,167	380	....	.....	2	12.16	378	1,580	2	9.16	4	5.08	....	1,574	61	23	4.40	8	4.75	....	30	146	5	4.53	104	18.80	4	33
June	1,945	115	1	4.00	....	.....	114	1,636	9	5.26	6	8.66	....	1,621	81	19	5.26	4	3.99	....	58	113	2	3.50	80	19.20	7	24
Averages	.....	.....	....	3.77	....	14.62	.....	.....	....	5.20	....	6.34	....	.....	....	....	5.24	....	5.27	....	....	.....	....	4.28	....	20.43	....	....
Totals	20,519	6,761	59	.....	8	.....	6,694	11,633	33	.....	48	.....	2	11,550	906	457	.....	65	.....	1	383	1,219	40	.....	778	.....	26	375

TABLE X.—*Meters inspected and proved for the Georgetown Gas Light Co. and for consumers of gas in Georgetown, from July 1, 1911, to June 30, 1912.*

Month.	Meters tested.	New meters for company.						Repaired meters for company.						Consumers' meters on complaint of consumers.						Consumers' meters on complaint of company.						
		Number.	Fast.		Slow.		Correct.	Number.	Fast.		Slow.		Correct.	Number.	Fast.		Slow.		Correct.	Number.	Fast.		Slow.		Correct.	Did not register.
			Number.	Per cent.	Number.	Per cent.			Number.	Per cent.	Number.	Per cent.			Number.	Per cent.	Number.	Per cent.			Number.	Per cent.	Number.	Per cent.		
July	23	6					6	14					14	1					1	2			1	3.00	1	
August	134	130	1	6.00			129	1					1	2					2	1	1	4.33				
September	140	39					39	95	4	4.50			91	6			1	3.33	5							
October	18							9			1	7.00	8	8	1	3.00	2	3.66	5	1			1	6.00		
November	23	5					5							16	5	4.00	2	4.33	9	2	1	5.00			1	
December	100	37					37	44	2	4.08			42	19	10	5.65	3	9.88	6							
January	48	24					24	18	1	4.00			17	5	3	5.00			2	1					1	
February	41							30	2	3.66			28	11	7	5.66			4							
March	67	57					57							7	4	6.83			3	3	1	5.33			2	
April	118	40					40	74					74	4	2	4.00			2							
May	53	52	1	5.00			51							1					1							
June	95	23					23	67					67	5	1	5.00			4							
Averages				5.50						4.16		7.00				5.29		6.12				4.89		4.50		
Total	860	413	2				411	352	9		1		342	85	33		8		44	10	3		2		5	

REPORT OF THE PERMIT CLERK.

WASHINGTON, *August 10, 1912.*

SIR: I have the honor to submit the annual report of the work of this office, giving the character and number of permits issued during the fiscal year ending June 30, 1912.

Permits issued for which fees were paid.

	1911						1912						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water:													
Connections	239	210	246	256	207	199	69	125	249	324	225	317	2,666
Repairs	149	133	155	135	131	133	206	328	181	146	119	102	1,918
Sewer:													
Connections	264	244	238	280	187	223	78	141	289	327	266	298	2,835
Repairs	106	103	86	87	109	72	58	79	99	88	93	76	1,056
Gas:													
Connections	349	451	350	380	252	214	143	130	288	280	526	326	3,689
Repairs	18	26	42	36	25	19	106	41	14	38	24	27	416
Carriage blocks and hitching posts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	8
Conduits	46	42	76	34	33	43	30	36	22	52	27	31	472
Gas mains	20	19	33	14	19	8	7	3	11	16	18	8	176
Guard stones	.....	3	2	.....	.....	.....	.....	2	.....	2	1	3	13
Lamp posts	.....	.....	.....	.....	.....	.....	.....	6	5	.....	.....	.....	11
Manholes, connect with sewer and enlarge	15	22	14	18	13	21	13	11	11	32	12	9	191
Parking fences	26	32	23	35	11	11	5	8	40	70	48	38	347
Poles	34	33	25	38	27	28	22	10	18	29	23	30	317
Wagon tags	1,266	233	.....	.....	.....	.....	.....	1,285	467	240	156	148	3,795
Total	2,532	1,551	1,290	1,313	1,014	971	737	2,205	1,694	1,644	1,546	1,413	17,910

Special permits issued without fee.

	1911						1912						Total.
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water, sewer, gas	77	95	81	80	78	76	62	60	92	78	90	77	946
Blasting	.....	1	2	1	.....	2	1	6	.....	.....	1	1	15
Bridge across gutter	3	2	3	.....	.....	3	2	.....	2	.....	2	1	18
Cables, aerial and overhead connections	42	31	34	46	30	32	13	20	16	17	22	26	329
Copings	106	84	127	130	102	116	3	19	53	165	111	106	1,122
Driveways	7	33	8	11	5	8	2	2	3	10	1	.....	70
Engines, move	6	4	4	3	1	7	1	4	5	8	8	4	55
Leads, lay and repair	146	143	189	211	166	142	5	35	97	266	170	173	1,743
Parkings:													
Grade	31	74	38	25	42	87	72	140	110	103	159	101	982
Pave	12	12	26	18	7	7	2	3	9	8	19	8	131
Railings renew	10	11	6	14	5	11	15	3	7	15	20	5	122
Renewals	18	44	47	23	20	12	59	40	125	19	34	18	459
Roadways and alleys close	2	1	1	6	.....	1	.....	.....	.....	.....	1	1	13
Roadways, grade and repair	6	3	8	4	5	1	1	3	13	7	6	3	60
Sidewalks:													
Grade and repair	6	3	4	4	5	12	4	5	5	9	2	3	62
Haul across	5	6	.....	2	8	5	3	11	5	8	2	2	57
Lay	36	29	27	55	59	27	.....	1	45	71	30	16	396
Roadways and parkings, occupy	5	.....	.....	.....	1	.....	2	.....	1	.....	3	1	13
Steps on parkings	116	85	150	160	145	139	.....	20	66	172	118	128	1,299
Stopcock boxes	8	.....	.....	8	.....	.....	8	.....	.....	8	.....	.....	32
Trees	1	.....	.....	.....	3	.....	.....	.....	4	.....	1	.....	9
U. S. Government	1	2	.....	2	5	.....	.....	1	.....	1	.....	.....	12
Walls, retaining	2	1	5	4	7	2	.....	.....	5	12	5	8	51
Water tables	56	40	73	110	56	71	.....	18	43	109	22	58	656
Wires, string	69	22	28	66	16	23	45	8	4	42	13	8	344
Steam and electric railways	1	3	.....	.....	.....	10	1	3	2	.....	3	1	24
Miscellaneous	3	8	5	9	10	4	15	1	4	4	2	5	70
Wagon tags	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	195
Total	775	717	866	992	776	798	316	403	716	1,132	845	754	9,285

During the year just past there was an increase of $2,894 in the amount of money paid for permit fees.

Permits issued during the year were 27,195, an increase of 4,178 over the previous fiscal year.

The following table shows the number of permits issued during the past 10 years and the amount paid for permit fees to the collector of taxes, District of Columbia, during that time.

Fiscal year.	Permits issued.	Fees paid.
1902-3	12,559	7,930
1903-4	12,565	8,103
1904-5	13,908	9,518
1905-6	16,019	10,496
1906-7	15,820	10,134
1907-8	15,874	9,392
1908-9	19,895	12,064
1909-10	22,862	13,838
1910-11	23,017	15,016
1911-12	27,195	17,910

Two thousand and seventy-five communications were referred to this office, briefs made on cards, permits issued when necessary, and reports made, papers indorsed, and returned to the respective division having supervision over the inspection of the work for which the permits were issued.

A report was made daily of all permits for excavations in the public space and forwarded to the engineer of highways.

Fourteen thousand one hundred and fifteen index cards were made out, sorted according to streets, and filed. This was an increase of 1,344 over the index cards made during the preceding fiscal year.

Again it is my privilege to officially invite your attention to the efficient and valuable aid given me by the assistant permit clerk and index clerk. During the past fiscal year they have been compelled to perform their multitudinous duties under conditions which have been more trying than in any former year. I beg to respectfully call your attention to the fact that during the past 10 years the number of permits issued has grown about 40 per cent. This entails an increase in the amount of indexing and clerical work to be performed by my assistants. But, notwithstanding the greater amount of work being accomplished by this office each year, the number of employees remains the same, despite the fact that I have annually recommended that one assistant index clerk be appointed to this office. In spite of the increase of work the records have been kept up to date, and I wish to extend my thanks for the cheerful manner in which my associates have ever been ready to assist me in the duties assigned me.

Very respectfully,

H. M. WOODWARD,
Permit Clerk, District of Columbia.

Maj. E. M. MARKHAM,
Corps of Engineers, United States Army,
Assistant to Engineer Commissioner, District of Columbia.

REPORT OF THE AUTOMOBILE BOARD.

WASHINGTON, *August 30, 1912.*

SIR: I have the honor to submit the following report of the automobile board of the District of Columbia for the fiscal year ended June 30, 1912:

There were examined at the meetings of the board on the first and third Fridays in each month, beginning at 7 o'clock p. m., and by the secretary and members at other times during the year, 2,393 persons desiring permits to operate motor vehicles, as required by the regulations. Of those examined 2,343 were recommended for permits, viz, 200 for electric type, 1,790 for gasoline type, 22 for steam type, and 331 for motorcycle type; 50, not being satisfactory, were not recommended. There were also issued 82 permits to employees of the United States and District of Columbia Governments for operating motor vehicles used for public business. In addition to the permits

issued, 323 duplicate permits were issued, affidavits being filed that the originals had been lost or destroyed.

There were paid for during the year 3,011 permits, the revenue therefrom amounting to $6,022.

There were registered and paid for during the year 3,924 "enamel metal identification number tags," viz, 182 for electric vehicles, 3,075 for gasoline vehicles, 35 for steam vehicles, and 632 for motor cycles; the revenue therefrom amounting to $7,848. To the United States and District of Columbia Governments 69 tags were issued without fee.

One hundred and forty-six duplicate tags were procured from the contractor for owners of motor vehicles whose tags had been lost or destroyed.

Two permits were revoked because of charges filed and upon recommendation of the major and superintendent of the Metropolitan police force.

The number of persons examined to operate motor vehicles, type of motor to be operated, number and kind of motor vehicle to which "metal identification number tags" were assigned and furnished to the owner of the motor vehicle, and the work of the fiscal year, is shown in the table following:

	Type of motor vehicle to be operated and amount paid in fees.									Number of identification number tags issued and amount paid in fees.						
	Electric.	Gasoline.	Steam.	Motor cycle.	Not competent.	Revoked.	United States and District of Columbia employees, no fee.	Duplicates.	Paid for permits.	Electric.	Gasoline.	Steam.	Motor cycle.	United States and District of Columbia employees, no fee.	Duplicates procured.	Paid for tags.
1911.																
July	7	141	3	44	4	....	6	31	$558	3	305	5	75	5	.....	$784
August	13	175	1	26	....	....	4	40	538	12	275	3	58	2	15	606
September	12	156	4	16	2	....	5	45	504	9	260	4	42	4	17	630
October	27	119	3	23	2	....	7	31	566	14	242	6	43	8	12	610
November	25	129	1	23	3	1	20	20	452	13	234	1	27	10	.....	550
December	19	138	....	10	1	....	7	15	370	22	178	....	18	4	9	436
1912.																
January	17	82	....	12	....	....	.....	10	236	19	121	1	14	8	27	310
February	7	103	1	3	2	1	5	22	226	15	126	....	25	3	.....	332
March	12	139	....	43	3	....	5	27	438	12	224	3	86	5	15	650
April	14	188	2	52	10	....	3	31	680	17	395	2	87	6	22	1,002
May	25	213	....	29	19	....	11	36	736	20	373	5	87	.....	9	970
June	22	207	7	50	4	....	9	35	718	21	343	5	70	14	29	878
Total	200	1,790	22	331	50	2	82	323	6,022	182	3,075	35	632	69	146	7,848

The act making appropriations to provide for the expenses of the Government of the District of Columbia for the fiscal year ending June 30, 1908 (Public, No. 169), and amended by the act making appropriations to supply urgent deficiencies in the appropriations for said fiscal year, appropriated for the purchase of enamel metal identification number tags for motor vehicles in the District of Columbia, and authorized the Commissioners of the District of Columbia to "amend the regulations controlling motor vehicles so as to provide for such identification tag and registration thereof the owner of each motor vehicle pay the sum of $2, and the secretary of the automobile board after the payment of said fee to the collector of taxes, District of Columbia, issue to said owner the identification number tag." The fees received for "enamel metal identification number tags" and also for permits to operate motor vehicles is shown below by fiscal years.

	Permits issued.	Fees paid.	Tags issued.	Fees paid.
1907-8	1,050	.....	2,214	$2,666
1908-9	1,818	.....	1,684	3,368
1909-10	2,262	$1,292	2,387	4,752
1910-11	2,262	4,460	2,654	5,314
1911-12	2,593	6,022	4,070	7,848

The personnel of the automobile board was changed during the year by the death of Mr. Daniel Johnson, who had been a member since its inception, the vacancy being filled by the appointment of Mr. James T. Fink.

Very respectfully,

H. M. WOODWARD.
Secretary Automobile Board, District of Columbia.

Approved.

E. F. VERMILLION,
Chairman Automobile Board, District of Columbia.

Maj. E. M. MARKHAM,
Corps of Engineers, United States Army,
Assistant to Engineer Commissioner, District of Columbia.

REPORT OF THE ELECTRICAL ENGINEER.

WASHINGTON, *September 10, 1912.*

SIR: I have the honor to submit the following report of the operations of the electrical department during the fiscal year ended June 30, 1912.

NAPHTHA LIGHTING.

Nine hundred and forty-one mantle naphtha lamps were in service in the District of Columbia on July 1, 1911, all of which have been replaced with either gas lamps, or where impracticable to extend gas mains, with 40-candlepower incandescent electric lamps served by overhead wires. This change has not only effected a saving in the annual cost for maintenance, but has greatly improved the service. The contract rate for naphtha lighting was $22.80 per lamp per annum, whereas the cost for the service substituted is only $18.40 for each gas lamp, and $15 for each electric lamp. Naphtha lamps have been used only as a temporary means of lighting sections of the District to which gas or electricity could not be readily supplied.

IMPROVED MANTLE GAS LIGHTING.

Experiments have been conducted throughout the year with an improved type of mantle gas lamp on which 16-inch alabaster globes are used, imitating in appearance the improved form of incandescent electric lighting recently installed on several important streets. One hundred such lamps have been installed on K street NW., from Mount Vernon Square to Washington Circle. The gas-light company is continuing the experiments with the hope of developing a mantle lighting unit satisfactory for use on some of the principal residence streets.

IMPROVED INCANDESCENT ELECTRIC LIGHTING.

The lighting of 7½ miles of streets was improved by the installation of 100-candlepower incandescent electric lamps in place of the existing gas and electric arc lamps. On the majority of these streets, the lamps have been arranged alternately on the two sides with an average spacing, measured along the axis of the street, of 60 feet. In some instances, however, as on Pennsylvania Avenue from Fifteenth to Seventeenth Streets, and on Fifteenth Street from Pennsylvania Avenue to New York Avenue, the posts have been set opposite each other with an average spacing of 70 feet.

The lamp-post for this new installatign was carefully designed, and has been adopted as the standard style for the District of Columbia.

During the year this form of lighting was installed on the following streets, involving the erection of 742 lamps: Massachusetts Avenue from Union Station Plaza to Dupont Circle; Connecticut Avenue from H Street to Connecticut Avenue Bridge; Pennsylvania Avenue from Fifteenth to Seventeenth Streets NW.; Seventeenth Street from B to I Streets NW;. Fifteenth Street from Pennsylvania Avenue to I Street NW.; Vermont Avenue from H Street to Thomas Circle; H Street from Fourteenth to Seventeenth Streets NW.; around Mount Vernon Square; around Dupont Circle; around McPherson Square; around Farragut Square; around Thomas Circle.

In order to secure this form of lighting for Seventh Street, from Pennsylvania Avenue to New York Avenue, but with a closer spacing of posts than otherwise generally obtains, the merchants of that section formed an association for the purpose of contributing toward the cost of installation and maintenance. Accordingly, 87 lamps

were erected, opposite each other, spaced approximately 70 feet apart. The total cost of the posts was $1,731.30 of which the merchants paid $625.20; the total annual cost of maintenance at the present rates is $2,248.95, toward which the merchants contribute $878.90.

ELECTRIC ARC LIGHTING.

The appropriation act for the fiscal year 1912, required 400 of the series-inclosed and multiple-inclosed arc lamps in service on July 1, 1911, to be replaced either with 4-ampere magnetite lamps or with some other form of improved lighting, as directed by the Commissioners, the change to be made by April 1, 1912. In compliance with this act, the inclosed arc lamps on the following streets were replaced with 4-ampere magnetite lamps:

Fourteenth Street from Thomas Circle to Park Road	45
H Street from Fourth Street west to Fifteenth Street east	42
Pennsylvania Avenue from Seventeenth Street to Washington Circle	15
Corner Eighteenth and H Streets NW	1
Around Washington Circle	6
Pennsylvania Avenue from Washington Circle to M Street	12
Thirty-first Street, between M and N Streets NW	1
Twenty-sixth Street, between Pennsylvania Avenue and M Street	1
Wisconsin Avenue from M to Q Streets NW	9
M Street from Connecticut Avenue to Thirty-sixth Street NW	38
Florida Avenue from Second to Seventh Streets NW	12
Georgia Avenue, between Florida Avenue and Trumbull Street	8
Delaware Avenue, between Union Station and B Street NE	8
North Capitol Street, between B and C Streets NE	3
Total	201

The remaining 199 lamps were on streets on which the improved form of incandescent electric lighting was installed.

LIGHTS ALONG STEAM RAILROADS.

The situation with respect to the several suits brought by the District of Columbia against steam railroad companies to compel reimbursement of sums expended by the District for maintaining lights along the respective rights of way of such companies, is as follows:

An action having been brought against the Washington Terminal Co. to recover the amount due up to and including September 1, 1909, under the act of 1882 (22 Stats., 466) and the act of 1908 (35 Stats., 287), the Supreme Court of the District of Columbia held that the former act did not apply to this company, but that the District could recover under the act of 1908. The court of appeals affirmed this judgment, holding that the sum of $1,042.04 was due the District under the act of 1908. No attempt has been made to collect this amount, as, with the consent of counsel, the case is to be retried before a jury on certain questions of fact. In addition to the amount of this judgment, there is due from the Washington Terminal Co. $12,504.70 for the period from September 1, 1909, to June 30, 1912.

The case of the District against the Philadelphia, Baltimore & Washington Railroad Co., representing a claim of $8,375.40, decided against the District in the lower court, was removed to the Supreme Court of the United States, but under a decision of that court construing the recent judicial code, the writ of error will have to be dismissed, so that this suit is a victory for the railroad. In view of the outcome of this suit, which involved not only the maintenance of lamps along the streets from which grade crossings have been removed, but also included those crossings still at grade, I respectfully recommend that the matter be brought to the attention of Congress for the enactment of such legislation as may be deemed advisable.

A settlement was effected in the case against the Georgetown Barge, Dock, Elevator & Railway Co., whereby the total amount of the District's claim for lighting up to July 1, 1912, $1,029.96, has been paid. As the tracks of this company are used under some agreement with the Baltimore & Ohio Railroad Co., this latter company has agreed to pay the bills for this lighting.

TREE TRIMMING.

During September, 1911, the employees of the division of trees and parkings, working under the supervision of an inspector from this department, trimmed 6,140 trees which were obstructing light from 3,662 lamps, all within the fire limits. The cost to this department for the labor involved was $268.

Distribution of new lamps established during the fiscal year 1912.

Kind of light.	North-west.		North-east.		South-west.		South-east.		County.						Total.
									North-west.		North-east.		South-east.		
	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	Streets.	Alleys.	
Mantle gas	59	92	53	56	61	58	125	46	97	20	36	7	4	....	[1] 714
Electric arc:															
6.6-ampere series inclosed	17	....	....	....	7	....	....	....	....	....	....	....	....	....	[2] 24
4-ampere magnetite	140	....	42	....	....	....	....	....	34	....	....	....	....	....	[3] 216
Electric incandescent:															
100-candlepower	794	....	8	....	....	....	1	....	45	....	....	....	....	....	[4] 848
80-candlepower	....	....	9	....	....	....	....	....	....	....	....	....	....	....	[5] 9
60-candlepower	28	....	....	....	....	....	....	....	241	....	....	....	....	....	[6] 269
40-candlepower	....	....	....	....	3	....	....	....	310	....	116	....	108	....	[7] 537
Street-designation lamps:															
On fire-alarm posts—															
Gas	1	....	5	....	7	....	....	....	6	....	2	....	....	....	21
Electric incandescent	22	....	....	....	....	....	....	....	8	....	....	....	....	....	30
On patrol posts, electric incandescent	7	....	....	....	....	....	....	....	....	....	....	....	....	....	7
Total	1,068	92	117	56	78	58	126	46	741	20	154	7	112	....	2,675

[1] Of this number 198 lamps in alleys and 299 lamps in streets were changed from naphtha to gas.
[2] Of this number 2 lamps were changed from multiple-inclosed arc lamps, 7 from gas lamps.
[3] These lamps were changed from multiple inclosed.
[4] Of this number 49 series-inclosed arc lamps, 104 multiple-inclosed arc lamps, 19 mangnetite arc, and sixteen 80-candlepower incandescent electric lamps were changed to 100-candlepower incandescent electric lamps.
[5] These lamps were changed from series-inclosed arc lamps.
[6] Of this number 40 series-inclosed arc lamps, 45 magnetite arc lamps, and five 40-candlepower incandescent electric lamps, and 2 gas lamps were changed to 60-candlepower incandescent electric.
[7] Of this number 113 gas lamps and 184 naphtha lamps were changed to 40-candlepower incandescent electric lamps.

The changes have been as follows:

Kind of light.	Added.	Discontinued.
Mantle gas	714	345
Naphtha	.....	777
Electric arc:		
6.6-ampere series inclosed	24	315
5-ampere multiple inclosed	.....	106
6.6-ampere magnetite	.....	6
4-ampere magnetite	216	58
Electric incandescent:		
200-candlepower	.....	2
100-candlepower	848	16
80-candlepower	9	16
60-candlepower	269	.....
40-candlepower	537	108
Street-designation lamps:		
On fire-alarm posts—		
Gas	21	17
Electric incandescent	30	2
On patrol posts—		
Gas	.....	6
Electric incandescent	7	4
On plain posts—		
Gas	.....	49
Electric incandescent	.....	1
Total	2,675	1,828

Net increase during the year, 847 lamps.

SUMMARY OF CHANGES.

Net increase in number of lamps	847
Discontinued	520
Replaced by other kinds	1,308
Total changes	2,675

Lamps of all kinds in service July 1, 1912, as compared with July 1, 1911.

Kind of light.	1911	1912
Mantle gas	9,240	9,609
Naphtha	941	164
Electric arc:		
6.6-ampere series inclosed	652	361
5-ampere multiple inclosed	537	431
6.6-ampere magnetite	8	2
4-ampere magnetite	270	428
Electric incandescent:		
200-candlepower	2	.....
100-candlepower	21	853
80-candlepower	223	216
60-candlepower	.....	209
40-candlepower	2,429	2,858
4-glower Nernst	60	60
Street-designation lamps:		
Gas	492	441
Electric	30	60
Total	14,905	15,752

Increase during year, 847 lamps.

DISTRICT UNDERGROUND CONDUIT AND CABLE SYSTEM.

The following conduit connections were made to the underground system:

Fire-alarm posts (total, 14).

Fifteenth Street and Pennsylvania Avenue NW.[1]
Fifteenth and F Streets NW.[1]
Seventh and K Streets NW.[1]
Eighth and Randolph Streets NW.[1]
Rock Creek Church Road and Warder Place NW.[1]
Fifteenth and H Streets NW.[1]
Fifteenth and I Streets NW.[1]
Rhode Island and South Dakota Avenues NE.
Wisconsin Avenue and Ellicott Street NW.
Wisconsin Avenue and Harrison Street NW.
Third and G Streets NW.[2]
Ninth and G Streets NW.[2]
Third Street and Florida Avenue NW.
Seventh and E Streets NW.

Patrol posts (total, 8).

Fifteenth and F Streets NW.[1]
Twentieth and R Streets NW.[1]
Seventeenth and K Streets NW.[1]
Wisconsin Avenue and District line.
Fourteenth and I Streets NW.[2]
Kalorama Road north of Twenty-third Street NW.[2]
Blair Road south of Cedar Street NW.[2]
Seventh and E Streets NW.

Connections to buildings (total, 13).

Government Printing Office garage, Jackson Alley, between North Capitol and First Streets NW.[1]
Manual Training School, Thirty-third Street and Wisconsin Avenue NW.[1]
John R. West School, Farragut Street, between Thirteenth and Fourteenth Streets NW.[1]
Grover Cleveland School, Eighth and T Streets NW.[1]
Armstrong Manual Training School, P Street between First and Third Streets NW.
Central High School, O Street between Sixth and Seventh Streets N.W.
Randle Highlands School, Thirtieth and R Streets SE.
Washington Warehouse Building, M Street between First and North Capitol Streets NE.[1]
Columbia Hospital, Twenty-fifth Street between L and M Streets NW.[1]
Palais Royal, Eleventh and G Streets NW.
Imperial Theater, Ninth Street between D and E Streets NW.[1]
Cosmos Theater, D Street between Ninth and Tenth Streets NW.[2]
Crane Building, 1221 I Street NW.[1]

In making the above-mentioned connections, 2,180 feet of conduit (duct feet) and six manholes were built, the work being done by this department except where noted otherwise.

[1] Built by Chesapeake & Potomac Telephone Co. under contract.
[2] Built by H. M. Schreiner under contract.

Connections to the underground system July 1, 1912.

	On July 1, 1912.		On July 1, 1912.
Fire-alarm posts	338	Miscellaneous District buildings	6
Police-patrol posts	249	United States Government buildings	17
Cable-terminal posts	7	Private buildings	44
Schoolhouses	50	Cable poles	95
Fire-department houses	28		
Police-station houses	12	Total	846

Cable installed and withdrawn during the year and amount in service June 30, 1912.

INSTALLED.

Size of cable.	Signal.		Telephone.		Combination.					Total.		
	Cable.	Conductors No. 14, Brown & Sharpe.	Cable.	Conductors No. 19, Brown & Sharpe.	Cable.	Conductors. No. 14, Brown & Sharpe.		Conductors No. 14, Brown & Sharpe.		Cable.	Conductors No. 14, Brown & Sharpe.	Conductors No. 19, Brown & Sharpe.
						Pairs.	Conductors.	Pairs.	Conductors.			
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*No.*	*Feet.*	*No.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
35 pair	.....	.....	.....	.....	1,423	15	42,690	20	56,920	1,423	42,690	56,920
30 pair	.....	.....	.....	.....	1,740	10	34,800	20	69,600	1,740	34,800	69,600
12 pair	.....	.....	.....	.....	15,945	6	191,340	6	191,340	15,945	191,340	191,340
10 pair	.....	.....	.....	.....	293	5	2,930	5	2,930	293	2,930	2,930
8 pair	.....	.....	.....	.....	8,536	4	68,288	4	68,288	8,536	68,288	68,288
6 pair	.....	.....	.....	.....	385	4	3,080	2	1,540	385	3,080	1,540
5 pair	.....	.....	.....	.....	578	3	3,468	2	2,312	578	3,468	2,312
3 pair	.....	.....	.....	.....	8,100	2	32,400	1	16,200	8,100	32,400	16,200
Total	.....	.....	.....	.....	37,000	....	378,996	....	409,130	37,000	378,996	409,130

WITHDRAWN.

20 pair	.....	.....	.....	.....	334	10	6,680	10	6,680	334	6,680	6,680
12 pair	.....	.....	.....	.....	46	6	552	6	552	46	552	552
10 pair	.....	.....	.....	.....	492	5	4,920	5	4,920	492	4,920	4,920
8 pair	.....	.....	.....	.....	411	4	3,288	4	3,288	411	3,288	3,288
6 pair	.....	.....	.....	.....	407	4	3,256	2	1,628	407	3,256	1,628
5 pair	.....	.....	.....	.....	638	3	3,828	2	2,552	638	3,828	2,552
3 pair	.....	.....	.....	.....	460	2	1,840	1	920	460	1,840	920
Total	.....	.....	.....	.....	2,788	....	24,364	....	20,540	2,788	24,364	20,540

Cable installed and withdrawn during the year and amount in service June 30, 1912—Continued.

IN SERVICE JUNE 30, 1912.

Size of cable.	Signal.		Telephone.		Combination.					Total.		
	Cable.	Conductors No. 14, Brown & Sharpe.	Cable.	Conductors No. 19, Brown & Sharpe.	Cable.	Conductors. No. 14, Brown & Sharpe. Pairs.	Conductors. No. 14, Brown & Sharpe. Conductors.	Conductors No. 14, Brown & Sharpe. Pairs.	Conductors No. 14, Brown & Sharpe. Conductors.	Cable.	Conductors No. 14, Brown & Sharpe.	Conductors No. 19, Brown & Sharpe.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*No.*	*Feet.*	*No.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
100 pair			10,812	2,162,400						10,812		2,162,400
90 pair					480	30	28,800	60	57,600	480	28,800	57,600
80 pair					4,503	30	270,180	50	450,300	4,503	270,180	450,300
75 pair			4,275	641,250						4,275		641,250
70 pair					1,857	30	111,420	40	148,560	1,857	111,420	148,560
65 pair					2,785	15	83,550	50	278,500	2,785	83,550	278,500
60 pair					2,940	30	176,400	30	176,400	2,940	176,400	176,400
55 pair					11,401	15	342,030	40	912,080	11,401	342,030	912,080
50 pair			4,318	431,800						4,318		431,800
50 pair	2,533	253,300								2,533	253,300	
45 pair					6,069	20	242,760	25	303,450	6,069	242,760	303,450
45 pair					19,054	15	571,620	30	1,143,240	19,054	571,620	1,143,240
40 pair					5,388	15	161,640	25	269,400	5,388	161,640	269,400
35 pair					23,767	15	713,010	20	950,680	23,767	713,010	950,680
33 pair					4,633	17	157,522	16	148,256	4,633	157,522	148,256
30 pair	13,019	781,140								13,019	781,140	
30 pair			3,036	182,160						3,036		182,160
30 pair					574	15	17,220	15	17,220	574	17,220	17,220
30 pair					63,811	10	1,276,220	20	2,552,440	63,811	1,276,220	2,552,440
25 pair			12,330	616,500						12,330		616,500
25 pair					1,043	10	20,860	15	31,290	1,043	20,860	31,290
20 pair			8,861	354,440						8,861		354,440
20 pair					18,692	10	373,840	10	373,840	18,692	373,840	373,840
18 pair					5,494	8	87,904	10	100,880	5,494	87,904	109,880
15 pair	19,247	577,410								19,247	577,410	
15 pair			72	2,160						72		2,160
15 pair					3,000	8	48,000	7	42,000	3,000	48,000	42,000
14 pair					6,424	6	77,088	8	102,784	6,424	77,088	102,784
12 pair	12,240	289,856								12,240	289,056	
12 pair					48,266	6	579,192	6	579,192	48,266	579,192	579,192
10 pair	570	11,400								570	11,400	
10 pair					25,118	5	251,180	5	251,180	25,118	251,180	251,180
8 pair					113,686	4	909,488	4	909,488	113,686	909,488	909,488
6 pair					5,654	4	45,232	2	22,616	5,654	45,232	22,616
5 pair					32,833	3	196,998	2	131,332	32,833	196,998	131,332
3 pair					113,090	2	452,360	1	226,180	113,090	452,360	226,180
Total	47,609	1,912,306	43,704	4,390,710	520,562	....	7,194,514	....	10,187,908	611,875	9,106,820	14,578,618

Installed, 7 miles of cable containing 149.26 miles of conductor; withdrawn, 0.52 mile of cable containing 8.50 miles of conductor; in service June 30, 1912, 115.88 miles of cable containing 4,485.87 miles of conductor.

Amount of space occupied by cable installed and withdrawn during year and by that in service July 1, 1912.

Owner of space.	Space occupied by cable.			
	Laid without conduit.	Installed during year.	With drawn during year.	July 1, 1912.
	Feet.	*Feet.*	*Feet.*	*Feet.*
District of Columbia		7,411	906	125,465
Chesapeake & Potomac Telephone Co		25,764	1,404	459,212
Washington Railway & Electric Co.[1]		1,359	478	14,530
United States Government				1,536
Western Union Telegraph Co				7,180
Washington Terminal Co				1,019
Submarine cable				150
Placed in parking	2,064			2,064
Miscellaneous		402		719
Total	2,064	34,936	2,788	611,875

[1] Under this name are included the conduits of all the companies controlled by this corporation.

Aerial cable in service June 30, 1912.

Size of cable.	Telephone.		Combination.					Total.		
	Cable.	Conductors No. 19, Brown & Sharpe.	Cable.	Conductors No. 14, Brown & Sharpe.		Conductors No. 19, Brown & Sharpe.		Cable.	Conductors No. 14, Brown & Sharpe.	Conductors No. 19, Brown & Sharpe.
				Pairs.	Conductors.	Pairs.	Conductors.			
	Feet.	*Feet.*	*Feet.*	*No.*	*Feet.*	*No.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
25-pair	1,599	79,950	.....	.....	.....	.....	.....	1,599	.....	79,950
20-pair	.....	.....	1,152	10	23,040	10	23,040	1,152	23,040	23,040
15-pair	.....	.....	8,625	6	103,500	9	155,250	8,625	103,500	155,250
12-pair	.....	.....	9,558	6	114,696	6	114,696	9,558	114,696	114,696
10-pair	.....	.....	890	5	8,900	5	8,900	890	8,900	8,900
8-pair	.....	.....	852	4	6,816	4	6,816	852	6,816	6,816
Total	1,599	79,950	21,077	.....	256,952	.....	308,702	22,676	256,952	388,652

In service June 30, 1912, 4.29 miles of cable containing 122.27 miles of conductor.

FIRE-ALARM SYSTEM.

Twelve new fire-alarm boxes were placed in service during the year, 8 public and 4 private, located as follows:

Public boxes.

No. 291, Fifth and H Streets NW.
No. 284, Third and Florida Avenue NW.
No. 565, Ninth and C Streets SE.
No. 757, Connecticut and Cathredral Avenues NW.
No. 773, Connecticut Avenue and Morrison Street NW.
No. 859, Eleventh and Euclid Streets NW.
No. 1612, Fifteenth and D Streets NE.
No. 1632, Twenty-second and Lawrence Streets NE.

Private boxes.

No. 1223, Palais Royal, Eleventh and G Streets NW.
No. 1224, Imperial Theater, Ninth Street, between D and E Streets NW.
No. 1225, Cosmos Theatre, 717–719 Pennsylvania Avenue NW. .
No. 1233, Crane & Co., 1221 I Street NW.

During the year 15 fire-alarm boxes were changed from overhead to underground connection.

Fire-alarm boxes in service.

	July 1, 1911.	July 1, 1912.
Connected by overhead wires:		
Public boxes	105	108
Private boxes	47	47
Connected by underground wires:		
Public boxes	313	318
Private boxes	56	59
Total	521	532

The fire-alarm system was also extended to new engine house No. 24, Rock Creek Church Road and Georgia Avenue NW., and to the new No. 2 Chemical Engine House at Twenty-eighth Street and Pennsylvania Avenue SE.

Each fire-alarm box was tested several times during the year, the contact points cleaned, and the mechanism thoroughly overhauled. This is done regularly once a month as far as possible. The total number of tests amounted to 3,968, being an average of 7.496 per box.

Alarms received and transmitted:	
Regular box alarms	637
Alarms from telephone stations	5
Alarms from national automatic boxes	0
Local alarms	491
Second alarms	17
Third alarms	10
Fourth alarms	3
Fifth alarms	0
Sixth alarms	0
Total	1,163
False box alarms	72
False local alarms	8

Alarms received by the month.

Month.	Box.	Box (false).	Local.	Local (false).
1911.				
July	45	2	37	1
August	43	3	26	2
September	33	3	24	.....
October	55	7	28	1
November	54	5	42	.....
December	80	16	55	1
1912.				
January	86	7	67	1
February	65	10	49	.....
March	57	5	38	1
April	35	2	53	.....
May	50	7	40	1
June	39	5	32	.....
Total	642	72	491	8

POLICE PATROL SYSTEM.

The following changes and new installations were made in the patrol system:

First precinct.—New installation, connected underground: Box No. 55, southwest corner of Fourteenth and I Streets NW.

Third precinct.—New installation, connected underground: Box No. 61, Massachusetts Avenue and Thomas Circle NW.; box No. 62, northeast corner New Hampshire Avenue and N Street NW. Changed from overhead to underground connections: Box No. 16, southeast corner Seventeenth and B Streets NW.; box No. 41, Monument Grounds, foot of Seventeenth Street NW.

Fifth precinct.—New installation, connected underground: Box No. 54, southeast corner First and B Streets SE. New installation, connected overhead: Box No. 53, southeast corner Seventeenth and A Streets SE.

Sixth precinct.—On May 15, 1912, the system in this precinct was changed from a two-circuit registering and multiple telephone system, 12 boxes on each circuit, to a common-battery telephone system, each box being connected direct with the precinct by an independent circuit.

Seventh precinct.—New installation, connected underground: Box No. 43, southwest corner Thirty-fourth and Prospect Streets NW. New installation, connected overhead: Box No. 44, Massachusetts Avenue and Lovers Lane NW.

Ninth precinct.—New installation, connected overhead: Box No. 45, southeast corner Nineteenth and Rosedale Streets NE.; box No. 54, northwest corner Montello Avenue and Oates Street NE.; box No. 134, Division Avenue and Foot Street NE., Burville, D. C.

Tenth precinct.—New installation, connected underground: Box No. 61, southwest corner Eleventh and Otis Streets NW.; box No. 62, southwest corner Eleventh and Euclid Streets NW.; box No. 63, Kalorama Road and Twenty-third Street NW.; box No. 17, moved from Blair Road and Cedar Street to the new police-shelter booth and connected underground.

Eleventh precinct.—New installation, connected overhead: Box No. 36, southwest corner Pennsylvania Avenue and Thirtieth Street SE.; box No. 46, Nichols Avenue and Upsal Street SE.; box No. 52, Minnesota Avenue and Eighteenth Street SE.

Subprecinct, Tennallytown.—Boxes changed from overhead to underground: Box No. 32, Wisconsin Avenue and District line; box No. 51, moved from south side of Chevy Chase Circle to the corner of Connecticut Avenue and Oliver Street NW.

On July 1, 1912, the distribution of boxes among the precincts was as follows:

Precinct.	Wall boxes—		Booths.	Total.
	Underground.	Overhead.		
First	30	1	.....	31
Second	22	.....	.....	22
Third	36	6	.....	42
Fourth	19	13	.....	32
Fifth	17	12	.....	29
Sixth	24	.....	.....	24
Seventh	18	5	.....	23
Eighth	23	1	.....	24
Ninth	17	19	1	37
Tenth	32	11	2	45
Eleventh	24	5	3	27
Subprecinct, Tennallytown	8	10	3	21
Total	246	102	9	357

TELEPHONE SYSTEM.

The following 31 telephones were added to the 2 switchboards of the department during the year:

Office of the superintendent of repairs.
Residence of M. H. White, No. 2912 Olive Avenue NW.
M Street High School, extension.
Residence of D. E. Garges, 121 Twelfth Street NE.
Grover Cleveland School, Eighth and T Streets NW.
Manual Training School, Thirty-third Street and Wisconsin Avenue NW.
Central heating plant, M Street High School.
Morgan School, extension.
Office of Miss Jacobs, school at 607 O Street NW.
No. 2 chemical engine company.
No. 24 engine company.
Alexander Crummell School, Ivy City.
J. R. West School, Farragut Street between Thirteenth and Fourteenth NW.
Room 22, District Building.
Assistant superintendent street cleaning, room 327, District Building.
Office of L. P. Bradshaw, room 418, District Building.
Office of superintendent of sewers, extension, room 305, District Building.
Electrical department storerooms, Georgetown Market.
Cardoza Manual Training School.
Office of wheel tax division, room 119, District Building.
Room 302, District Building.
Armstrong Manual Training School, extension.
Randle Highlands School.
Board room, District Building.
Second police precinct.
Fourth police precinct.
Fifth police precinct.
Sixth police precinct.
Eighth police precinct.
Ninth police precinct.
Tenth police precinct.

The following nine telephones on these switchboards were discontinued during the year:

Residence of Harbor Master Dean.
Residence of Mr. Todd, superintendent of repairs, street cleaning department.
Leper camp, party line with District nursery at foot of E Street SE.
Old Ivy City School.
Two in the McKinley Manual Training School.
Two in the Washington Asylum Hospital.
Police desk sixth precinct.

FRANKLIN SCHOOL SWITCHBOARD.

The following telephone was added to this switchboard during the year: Franklin School Building, office of the janitor.

WATER DEPARTMENT SWITCHBOARD.

The following five telephones were added to this switchboard during the year:
Office of Mr. Fink, Bryant Street Pumping Station.
Brass foundry, Bryant Street Pumping Station.
Paint shop, Bryant Street Pumping Station.
Office of Mr. Graham, water registrar's office, District Building. Room 310½, District Building.

Number of telephones connected to the District system on July 1, 1912.

Offices in the District Building	133
Residences of officials	19
Outside offices and institutions	62
Public schools	181
Fire department	59
Police department, private branch exchange	62
Franklin School, private branch exchange	20
Water department, private branch exchange	36
Police patrol service	367
Total	939

There are 26 portable telephone sets in service, the property of the District of Columbia. These instruments are used by the fire department and the employees of the electrical department.

STORAGE-BATTERY SYSTEM.

The number of cells of storage battery in service July 1, 1912, was as follows:

On fire-alarm circuits	1,862
On patrol circuits	226
On local circuits	86
Total	2,174

POLES.

Under the authority of the act of Congress approved June 30, 1902, regulating the use of telephone wires in the District of Columbia, the Chesapeake & Potomac Telephone Co. have reported the following amount of work done during the fiscal year:

Poles erected in alleys within the prescribed area:		
Line	18	
Guy	1	
Anchor	12	
		31
Poles erected in streets within the prescribed area:		
Line	8	
Guy	4	
		12
Poles erected in alleys outside the prescribed area:		
Line	119	
Guy	4	
Anchor	60	
		183
Poles erected in streets outside the prescribed area:		
Line	61	
Guy	4	
Anchor	8	
		73
Total		299

Poles taken down in alleys within the prescribed area:		
Line	31	
Guy	8	
Anchor	1	
		40
Poles taken down in alleys outside the prescribed area:		
Line	29	
Guy	2	
Anchor	2	
		33
Poles taken down in streets outside the prescribed area:		
Line	60	
Guy	6	
		66
Total		139
Total erected during the year		299
Total taken down down during the year		139
Net increase		160

MISCELLANEOUS POLE WORK.

Poles erected, taken down, moved, etc.

	Poles erected.			Poles taken down.			Poles moved.		Poles replaced.		Poles reset.		Increase.		Decrease.	
	Line.	Guy.	Anchor.	Line.	Guy.	Anchor.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.
Chesapeake & Potomac Telephone Co	206	13	80	120	16	3	47	3	12	....	5	....	86	....	.....	3
Potomac Electric Power Co	272	13	2	8	....	....	20	....	49	....	....	....	264	13	.....	....
Western Union Telegraph Co	6	....	....	1	....	....	....	....	10	1	....	....	5	....	.....	....
Postal Telegraph-Cable Co	1	....	....	....	....	....	....	....	....	....	....	....	1	....	.....	....
District of Columbia	8	....	....	33	1	....	....	....	....	....	....	....	.....	....	25	1
Baltimore & Washington Transit Co	8	....	....	....	....	....	....	....	....	....	....	....	8	....	.....	....
Total	501	26	82	162	17	3	67	3	71	1	5	....	364	13	25	4

List of poles of all kinds July 1, 1912.

	Line.	Guy.	Total.
District of Columbia	646	22	668
United States Government	297	1	298
Chesapeake & Potomac Telephone Co	5,558	664	6,222
Potomac Electric Power Co	4,350	93	4,443
Western Union Telegraph Co	1,070	.....	1,070
Postal Telegraph-Cable Co	355	.....	355
Brightwood Ry. Co	340	.....	340
Columbia Ry. Co	461	.....	461
Anacostia & Potomac Ry. Co	3	.....	3
City & Suburban Ry. Co	86	.....	86
Georgetown & Tennellytown Ry. Co	304	.....	304
Capital Ry. Co	208	.....	208
Washington & Baltimore Transit Co	30	.....	30
Maryland & Washington Ry. Co	158	.....	158
Capital Traction Co	201	.....	201
Washington & Glen Echo Ry. Co	8	.....	8
Steam railroads	573	.....	573
Washington & Great Falls R. R. Co	401	.....	401
Total	15,049	780	15,829

ELECTRIC-WIRING INSPECTION.

An improved system of reporting and recording inspections, devised and installed during the year, not only reduces the amount of clerical work required of the inspectors but provides a more complete and accessible permanent record.

The card-index system of all electrical installations has also been completely revised and improved, materially lessening the amount of clerical work necessary to keep it up to date.

The following tables show the amount of work performed by this department in connection with the electrical-wiring inspection:

Permits issued by the inspector of buildings authorizing electrical wiring:		
Buildings	1,097	
Machinery	126	
Signs	34	
		1,257
Permits issued by the electrical department:		
For inside electrical work	1,695	
For outside electrical work	128	
Temporary permits	300	
Without fee (includes permits issued by inspector of buildings)	1,433	
Quarterly	47	
Gas lamps outside	119	
		3,722
Certificates issued:		
Final	2,915	
Without fee	182	
Preliminary	10	
		3,107
Lamps and apparatus installed:		
Incandescent		76,852
Arc lamps		110
Miscellaneous		4,431
Blank outlets		474
Motors		459
Total horsepower of motors		1,972½
Generators		9
Total kilowatt capacity of generators		674
Defective wiring installations repaired:		
Reported by outsiders	1	
Reported by inspectors	293	
		294
Notices of defective wiring sent		1,124
Requests for inspection		30
Miscellaneous		90
Inspections in connection with yearly license		204
Fees paid to the collector of taxes:		
For permits	$2,289.00	
For certificates	3,185.00	
Miscellaneous	10.00	
For 203 copies of Rules and Regulations, at 25 cents each	50.75	
For 1 copy of Rules and Regulations	1.00	
For 2 copies of amendments to Rules and Regulations at 10 cents each	.20	
For 2 blue prints, at 10 cents each	.20	
		5,536.15

Work of inspectors of electric wiring from July 1, 1911, to June 30, 1912.

Assistant electrical engineer:	
Days in office	136
Days on regular wiring inspection	105
Days on miscellaneous work (outside of District of Columbia)	11
	252
Hours on theater inspection during evenings, Sundays, and holidays	362

Assistant electrical engineer—Continued.

Inspections during office hours	1,290
Inspections on nights, Sundays, etc	804
	2,094
Inspections of theaters and moving-picture theaters	961
Inspections of other wiring	1,133
	2,094

Summary of inspections.

	Hours on inspection work on Sundays and nights.	Inspections in District buildings.	Theater inspections during office hours.	Theater inspections after office hours.	Days on inspection duty.	Total inspections.	Average inspections per day.
Inspector No. 1	42	161	307	115	270	3,955	14.64
Inspector No. 2	38	62	13	124	262	3,126	11.9
Inspector No. 3	80	75	34	197	273	2,851	10.0
Inspector No. 4	105½	344	196	187	272	3,855	14.17
Assistant electrical engineer	362	68	157	804	167	2,094	12.53
Total	627½	710	707	1,427	1,244	15,881	63.24

MISCELLANEOUS WORK.

This department prepared plans and specifications for and supervised the introduction of electrical installations in the following municipal properties:

Workhouse, Occoquan, Va.:
- Additions to electric-lighting installation.
- Preliminary layout of electric railway system from the stockade to the wharf.
- Several inspections of existing plant on account of proposed additions.
- Preliminary work on a 50-kilowatt V. A. additional unit to replace the existing 20-kilowatt direct-connected generator and switchboard.

Armstrong Manual Training School:
- Specifications for gas and electric lighting fixtures.
- Specifications for addition and repairs to existing clock-and-bell system.
- Examination of plans and inspections during construction of new engines, generators, switchboards, and wiring system.

School No. 162:
- Plans and specifications for electric clock-and-bell system.
- Plans and specifications for electric-lighting system.

School No. 165: Plans and specifications for electric-lighting fixtures.

School No. 170: Plans and specifications for electric-light and telephone conduits.

School No. 172: Plans and specifications for conduits and wires for lighting and telephone systems.

Henry B. Cooke School: Plans and specifications for lighting fixtures.

Central High School:
- Approval of plans and inspections of bell-ringing transformer installation.
- Modification of plans and specifications for stage equpment.
- Plans and specifications for shooting-gallery lights.

Eastern High School: Plans and specifications for electric-light wiring and fixtures.

M Street High School: Approval of plans and inspection of lighting and heating plant.

Manual Training School—Thirtythird Street and Wisconsin Avenue NW.: Inspection of lighting installation.

McKinley Manual Training School: Examination of plans and inspection of lighting and power installation and clock-and-bell system in the third addition.

Western High School: Approval of plans and inspection of wiring in physics laboratory.

Fourth precinct police station: Plans, specifications, and inspection of electric-lighting system.

Sixth precinct police station: Plans, specifications, and inspection of electric-lighting system.

Eight precinct police station: Plans, specifications, and inspection of electric-lighting system.

Eleventh precinct police station: Inspection of electric-lighting system and provision for additional wiring.

Police court building—Sixth and D Streets NW.
Plans for fan wiring.
Inspection on account of trouble in lighting system.
Plans and specifications for interior telephone system.
Juvenile court, 1816 F Street NW.: Plans and specifications for fan wiring.
No. 2 engine house: Inspection during installation of ignition battery charging circuit.
No. 8 engine house:
Plans and specifications for electric-light wiring and fixtures.
Inspection on account of trip connection.
No. 16 engine house: Plans and specifications and inspection for electric light and fan installation.
No. 20 engine house: Inspection of wiring installation and plans and specifications for fixtures.
No. 24 engine house:
Plans and specifications for electric-lighting system and trip circuit.
Plans and specifications for electric-lighting fixtures.
No. 1 chemical engine house: Inspection on account of defective fixtures.
No. 2 chemical engine house:
Plans and specifications for electric lighting and trip system.
Plans and specifications for electric-lighting fixtures.
No. 5 chemical engine house: Inspection on account of defective fixtures.
No. 6 truck house: Inspection on account of defective lighting system.
District of Columbia fire boat: Inspection and repairs to plug connections.
Eastern market:
Plans and specifications for rewiring North Carolina Avenue addition.
Additions and changes in lighting system in old building.
Western market: Plans and specifications for outside lighting.
Wholesale produce market: Plans and specifications and inspection during installation of outside lighting system.
Temporary street-cleaning stables, alley in square 1043: Plans and specifications for electric wiring for lighting.
Permanent street-cleaning stables, alley in square 1043: Plans and specifications and inspection during installation of electric light and power system.
Street-cleaning department stables, alley in square 367: Plans and specifications for electric-lighting system.
Tuberculosis hospital: Inspection during installation of lighting in mortuary building.
District of Columbia pound and stable (health department): Plans and specifications for conduit wiring and fixtures in proposed new building.
Takoma Public Library: Inspection during installation of wiring in conduit for lights and motors.
Reservation No. 13: Plans and specifications for wiring of buildings and street lights in various parts of the reservation.

Considerable special work has been done by the engineering force of the department in connection with plans and specifications and the installation of the equipment in the new Riggs Building (Chase's New Theater), also for the new Arlington Hotel installation.

Respectfully submitted.

WALTER C. ALLEN,
Electrical Engineer, District of Columbia.

Maj. E. M. MARKHAM,
Corps of Engineers, U. S. Army,
Assistant to Engineer Commissioner, District of Columbia.

STATEMENT OF RECEIPTS AND EXPENDITURES.

LIGHTING.

Receipts.

Appropriation	$395,000.00
Repayments by Baltimore & Ohio R. R. Co	391.16
Repayments by Washington Terminal Co	[1] 4,074.22
Repayments by Georgetown, Dock, Elevator & R. R. Co	1,029.96
Miscellaneous repayments	155.06
Total	400,650.40

[1] Due, but not paid.

Expenditures.

Mantle gas lighting:			
American Street Lighting Co		$192,928.03	
Deductions for defective service	$381.18		
Deductions by agreement	5,352.30		
		5,733.48	
			$187,194.55
Washington Gas Light Co		1,034.40	
Deductions for defective service		6.57	
			1,027.83
Mantle naphtha lighting:			
American Street Lighting Co		15,935.87	
Deductions for defective service		139.26	
			15,796.61
Incandescent electric lighting:			
Potomac Electric Power Co		69,185.08	
Deductions for defective service		184.86	
			69,000.22
Arc lighting:			
Potomac Electric Power Co		101,666.27	
Deductions for defective service		295.32	
			101,370.95
Street-designation lighting:			
Washington Gas Lighting Co		4,365.24	
Deductions for defective service		6.10	
			4,359.14
Georgetown Gas Light Co		229.98	
Deductions for defective service		.42	
			229.56
Lamp-posts, lanterns, globes, etc			10,586.13
Paints, oils, etc			256.65
Travel expenses			284.54
Telegrams			2.92
Labor pay roll			2,246.75
Street signs, material, etc			263.12
Erecting, moving, and taking down posts			392.96
Office expenses			118.54
Tools and hardware			19.90
Repairs to pavements			97.08
Cartage			25.60
Repairs to bicycles			11.50
Models			123.00
Car tickets			20.00
Patterns			528.90
Stable expenses			244.79
Rent of storerooms			660.00
Blacksmith's shop expenses			100.00
Pay, driver, engineer commissioner's automobile			165.00
Miscellaneous			18.67
Total			395,144.91

GENERAL SUPPLIES.

Receipts.

Appropriation	13,500.00
Repayments	474.12
	13,974.12

Expenditures.

Office expenses	1,421.96
Telephone rental and service	4,313.15
Instruments and apparatus	885.16
Labor pay roll	561.01
Pay of blue printer	69.75
Livery	3,081.94
Stable expenses	695.23
Car tickets	110.00

Bicycles and repairs	$73.15
Travel expenses	4.65
Line supplies	87.93
Wire	113.64
Batteries and battery supplies	792.02
Tools and hardware	134.29
Conduit supplies	52.03
Pole construction	15.00
Pole supplies	210.00
Paints, oils, and glass	6.44
Repairs to pavements	1.35
Electric current and gas	83.30
Ice	10.20
Castings	13.84
Miscellaneous	103.31
	12,789.35

EXTENSION OF TELEPHONE SYSTEM, PUBLIC SCHOOLS.

Receipts.

Appropriation	1,425.00

Expenditures.

Conduit construction	188.74
Instruments and apparatus	58.05
Cable	1,027.45
Repairs to pavements	42.34
Line supplies	2.25
Total	1,318.83

EXTENSION OF POLICE-PATROL SYSTEM.

Receipts.

Appropriation	3,000.00

Expenditures.

Cable	1,885.60
Cast-iron patrol-box shells	418.10
Tools and hardware	63.00
Repairs to pavements	100.95
Posts, etc	207.87
Pole supplies	35.00
Conduit construction	41.80
Conduit supplies	134.00
Instruments and apparatus	37.50
Miscellaneous	27.57
Total	2,951.39

WIRES UNDERGROUND.

Receipts.

Appropriation	7,000.00
Repayments	407.46
Total	7,407.46

Expenditures.

Conduit construction	1,750.69
Conduit supplies	610.70
Posts	447.50
Repairs to pavements	489.80
Labor pay roll	595.48
Wire	55.05
Cable	3,127.99
Blacksmith's shop pay roll	100.00
Miscellaneous	2.16
Total	7,179.37

RECORD DIVISION.

[Directly under the supervision of the Engineer Commissioner.]

CHIEF CLERK OF THE ENGINEER DEPARTMENT	DANIEL E. GARGES.
WHARF COMMITTEE	DANIEL E. GARGES, *Chief Clerk, Engineer Department.* T. J. C. BAILY, Jr., *Engineer of Bridges.* RUSSELL DEAN, *Harbor Master.*
BOARD FOR CONDEMNATION OF INSANITARY BUILDINGS	Maj. E. M. MARKHAM, *Assistant to Engineer Commissioner.* WILLIAM C. WOODWARD, *Health Officer, District of Columbia.* MORRIS HACKER, *Inspector of Buildings.*
ASSISTANT ENGINEER IN CHARGE OF ROCK CREEK PARK	L. R. GRABILL.
SUPERINTENDENTS OF DISTRICT BUILDING	Maj. E. M. MARKHAM, Capt. MARK BROOKE, *Assistants to Engineer Commissioner.*

REPORT OF THE CHIEF CLERK OF THE ENGINEER DEPARTMENT.

WASHINGTON, D. C., *October 2, 1912.*

SIR: I have the honor to submit the following report of the operations of this office for the fiscal year ended June 30, 1912:

Communications received, briefed, recorded, and indexed	14,988
Vouchers prepared	403
Letters sent	7,333
Contracts drawn and indexed	196
Bonds approved and recorded	546

The tables accompanying this report show—

1. The expenditures from general appropriations for forage, horses, wagons, carts, etc.
2. Schedule of proposals received during the year.
3. Statement of contracts entered into during the year.

Very respectfully,

DANIEL E. GARGES,
Chief Clerk, Engineer Department.

Lieut. Col. WILLIAM V. JUDSON,
Corps of Engineers, United States Army,
Engineer Commissioner, District of Columbia.

Statement of expenditures from general appropriations for forage, horses, wagons, carts, etc., fiscal year 1912.

Cleaning and repairing sewers and basins	$5,046.25
Main and pipe sewers	191.42
Suburban sewers	175.00
Grade crossings	122.40
Assessment and permit work	724.57
Georgetown schedule	39.82
Northwest schedule	80.00
Southwest schedule	102.07
Northeast schedule	49.93
Repairs to streets, avenues, and alleys	449.64
Construction and repair oi bridges	100.00
Q Street bridge	95.91
Parking commission	2,175.10
Repairs to schools	499.09
Repairs to plumbing—schools	185.29
General expenses, water department	1,501.72
High service, water department	5,941.37
Total	17,479.58

SCHEDULE OF PROPOSALS RECEIVED DURING FISCAL YEAR 1911-12.

[Star indicates accepted proposal.]

Proposals for furnishing and installing six iron horse stalls at No. 7 engine house.

[Opened July 1, 1911.]

Bidders.	Price complete.	Time.
Fred S. Gichner	$528	3 weeks.
The Alexandria Iron Works	475	5 weeks.
A. F. Jorss*	448	30 days.

Proposals for making alterations and additions to the Armstrong manual training school, P Street NW., between First and Third Streets.

[Opened July 5, 1911.]

	Work complete.	Alternate bid.			Time of completion.
		A.	B.	C.	
W. E. Mooney	$83,975	$6,875	$18,000	$16,700	Specified.
Melton Construction Co.	74,800	9,000	15,500	16,000	Do.
Hoge & Luebkert Co. (Inc.)	75,895	6,053	13,352	16,413	Do.
Davis Construction Co. (Inc.)*	68,838	4,722	14,283	14,484	

Proposals for reconstructing District sand and gravel wharf.

[Opened July 6, 1911.]

Bidders.	Price complete.			
	Bid A.	Bid B.	Bid C.	Bid D.
Sanford & Brooks Co.*	$16,100.00	$13,360.00	$17,500.00	$14,500.00
Clark & Winston Co.	16,489.00	13,967.00	17,994.00	15,292.00

Bidders.	Bid E.						
	Item 1 (per cubic yard).	Item 2 (per cubic yard in scows).	Item 3 (the job).	Item 4 (the job).	Item 5 (per cubic yard on barge).	Item 6 (each).	Item 7 (each).
Sanford & Brooks Co.	$0.28	$0.30	$800.00	$875.00	$1.60	$10.00	$10.00
Modification of plans (sec. 21 of specifications)	.27	.27	800.00	[1] .35	1.60	10.00	10.00
Clark & Winston	.55	.55	363.00	737.00	1.65	11.00	11.00
Modification of plans (sec. 21 of specifications)	.55	.55	363.00	[1] .27	1.65	11.00	11.00

Bidders.	Bid E—Continued.						
	Item 8, (each).	Item 9 (each).	Item 10 (each).	Item 11 (each).	Item 12 (the job).	Item 13 (the job).	Item 14 (each).
Sanford & Brooks Co.	$2.50	$2.50	$13.00	$2.50	[5] $65.00	[5] $65.00	$12.00
Modification of plans (sec. 21 of specifications)	[2] 13.00	2.50	[3] 2.50	[4] 2.50	[6] 55.00	.....	12.00
Clark & Winston	3.85	3.85	14.30	3.85	7,244.00	8,420.00	17.60
Modification of plans (sec. 21 of specifications)	14.30	3.85	3.85	3.85	[5] 60.00	.....	17.60

[1] Per linear foot. [2] Oak piles. [3] Piles, measure platform. [4] Driving oak piles. [5] Per 1,000.

Proposals for laying cement sidewalks in the District of Columbia.

[Opened July 7, 1911.]

Bidders.	Class A (per square yard).	Class B (per square yard).
The Warren F. Brenizer Co.*	$0.96¾	$1.20
The Cranford Paving Co	1.03	1.27

Proposals for constructing two metal smokestacks at the Grant School.

[Opened July 10, 1911.]

Bidders.	Work complete.	Time.
G. W. Forsberg	$614	45 days.
J. E. Hurley *	575	35 days.

Proposals for constructing section 1 of the Anacostia main interceptor.

[Opened July 12, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry laid (per cubic yard).	6-inch subdrain pipe laid (per linear foot).
Geo. Hyman	$2.50	$8.50	$25.00	$20.00	$0.30
The Warren F. Brenizer Co.*	1.70	8.50	20.00	14.00	.30

Proposals for constructing section 2, Rock Creek main interceptor, Massachusetts Avenue to Connecticut Avenue.

[Opened July 12, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry B (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).
Geo. Hyman *	$0.30	$8.75	$21.00	$14.00
The Warren F. Brenizer Co	.80	8.00	21.00	14.00
E. G. Gummel	.70	7.70	20.00	13.60

Proposals for making boiler repairs at the certain schools.

[Opened July 17.]

Bidders.	School.			
	Henry.	Stevens.	Gales.	Garnett.
G. W. Forsberg	$114.00	$123.00	$214.00	* $900.00
J. E. Hurley	* 111.15	* 113.00	* 188.55	14.28
Webber & Thomas	183.00	186.60	394.80	20.00

Proposals for furnishing tracks at No. 2 truck house.

(Opened July 17, 1911.)

A. F. Jorss *	$90.00
Alexandria Iron Works	105.00

Proposals for furnishing and installing stock cases, cabinets, etc., for Manual Training Building, Wisconsin Avenue and Thirty-third Street.

(Opened July 24, 1911.)

Jas. H. Gibbons	$657.00
W. O. Gottwals Co. (Inc.)*	275.00

Proposals for replacing two condemned boilers in the basement of the Eastern High School, No. 85, with new boilers.

(Opened July 24, 1911.)

Bidders.	Price complete.	Time.
G. W. Forsberg	$1,694.00	By Sept. 10.
Eubank Bros	2,075.00	30 working days.
Coberth, Hanes & White Co.*	1,427.64	35 working days.
A. D. Granger Co	2,668.00	32 working days.
J. E. Hurley	1,570.00	35 working days.

Proposals for making boiler repairs at the Public Library.

(Opened July 25.)

J. E. Hurley	$85
G. W. Forsberg*	66

Proposals for razing and removing the building, No. 1609 Seventh Street NW., filling the cellar thereof, and cement plastering the party wall next south.

(Opened July 28, 1911.)

T. Edward Clark: * District pay him $115 and do all work.

Proposals for grading Rhode Island Avenue NE. and Irving Street NE.

(Opened July 31, 1911.)

Bidders.	Rhode Island Avenue NE.	Irving Street NE.
	Cubic yard.	*Cubic yard.*
Wm. F. Cush	.....	$0.24
E. G. Gummel*	$0.39	.22
G. B. Mullin	.44	.29¼
Geo. Hyman	.39	.26½

Proposals for retubing boilers at the Brookland School.

[Opened Aug. 1, 1911.]

Bidders.	Price complete.	2 tubes in high pressure boiler.	Time.
Webber & Thomas	$110	$9	20 days.
J. E. Hurley	118	10	3 weeks.
G. W. Forsburg*	[1] 108	.....	Do.

[1] Bid includes both jobs.

Proposals for retubing two boilers at the Cranch School.

[Opened Aug. 3, 1911.]

Bidders.	Price complete.	Time.
G. W. Forsberg	$164	3 weeks.
J. E. Hurley*	163	Do.
Webber & Thomas	165	21 days.

Proposals for furnishing slate treads at the Hyde School.

[Opened Aug. 7, 1911.]

Bidders.	Price complete.	Time.
Edwin E. Ellett	$58	30 days.
National Mosaic Co.*	58	13

Proposals for constructing vault and resetting steps in front of the Grant School, G Street, between Twenty-first and Twenty-second streets NW.

[Opened Aug. 21, 1911.]

C. H. Knight	$1,400
Davis Construction Co	1,964
R. E. Boiseau*	1,670
Wm. Rothwell & Son	1,798
Skinker & Garrett	2,049
W. E. Mooney	2,378

Proposals for moving the Burrville School, on Division Avenue, between Hayes and Bell Streets, Burrville, Brook Station, on the Washington, Baltimore & Annapolis Electric R. R., and the Military Road School, on Military Road, a short distance west of the intersection of Fourteenth Street Road and Georgia Avenue, and for excavating.

[Opened Aug. 23, 1911.]

Bidder.	Price complete.	Time.
C. L. Saers & Son*	$2,750	20 working days.

Proposals for furnishing new folding gate at the Edmonds School, No. 135.

[Opened Aug. 24, 1911.]

Bidder.	Price complete.	Time.
Columbian Ornamental Iron Works*	$68	10 days.

Proposals for the construction of trunk sewers in Massachusetts Avenue Heights.

[Opened Aug. 24, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Concrete masonry (per cubic yard).	Vitrified brick masonry (per cubic yard).	Sewer brick masonry (per cubic yard).	6-inch subdrain pipe (per linear foot).
E. G. Gummel	$0.70	$7.00	$22.00	$14.00	$0.30
Jas. A. Coyle	.80	7.50	20.00	14.00	.30
The Warren F. Brenizer Co.*	.50	6.50	20.00	14.00	.30
Lyons Bros	1.10	10.00	25.00	18.00	.55

Proposals for reinforcing metal stack, almshouse.

[Opened Aug. 25, 1911.]

Bidders.	Price, complete.	Time.
G. W. Forsberg *	$70	3 weeks.
J. E. Hurley	110	4 weeks.

Proposals for retubing two boilers at the almshouse.

[Opened Aug. 29, 1911.]

Bidders.	Price, complete.	Time.
J. E. Hurley *	$206	3 weeks.
G. W. Forsberg	214	Do.

Proposals for constructing concrete driveway at Chemical Engine House No. 2, Pennsylvania Avenue and Twenty-eighth Place SE.

[Opened Sept. 5, 1911.]

Bidders.	Price, complete.	Alternate A.	Time.
R. J. Beall, jr	$414.50	$42.00	15 working days.
Wm. Rothwell & Son	700.00	70.00	

NOTE.—All bids rejected Sept. 9, 1911.

Proposal for making sewer and down-spout connections for cement warehouse.

[Opened Sept. 8, 1911.]

Wm. Rothwell & Son * $260

Proposal for furnishing and placing shower curtains and poles, bracing, shower heads, and slate curbs for Georgetown and Rosedale playground shelter houses.

[Opened Sept. 20, 1911.]

Bidder.	Price, complete.	Time.
Wm. Rothwell & Son *	$76	10 working days.

Proposals for furnishing labor and material to erect wrought-iron fence on Seventh Street, wire fence on interior of site, and certain cement work, McKinley Manual Training School.

[Opened Sept. 25, 1911.]

Bidders.	Price, complete.	Time of completion.
Fred S. Gichner	$200	20 working days
Jos. H. Gibbons	129	21 working days
Wm. Rothwell & Son *	136	

Proposals for installing lamp at No. 11 police station.

[Opened Sept. 26, 1911.]

Bidders.	Price complete.	Time of completion.
Thomas J. Williams	$40	6 days.
Carroll Electric Co	45	10 days.

NOTE.—All bids rejected.

Proposals for constructing two 4-room school buildings, No. 170, to be located in Burrville, corner of Division Avenue and Hayes Street NE., and No. 171, to be located on the Military Road between Thirteenth and Fourteenth Streets (extended) NW.

[Opened Sept. 28, 1911.]

Bidders.	Burrville School, No. 170.			Military Road School, No. 171.			Combined bid both schools.
	Price complete.	Alternate A.	Alternate B.	Price complete.	Alternate A.	Alternate B.	
Robert J. Humphrey	$32,300			$33,000			$64,000
Burgess & Parsons	33,200	−$65	−$65	32,400	−$65	−$65	65,300
W. E. Mooney	30,398	− 40	− 75	30,584	− 50	+ 95	60,882
Davis Construction Co	32,879			33,418			65,300
Luebkert & Bro	30,172	−150	−125	30,900	−160	−140	61,000
Geo. E. Wyne	30,500			31,500			60,500
Skinker & Garrett	29,872	−120	−120	30,678	−135	−135	*60,000

Proposals for doing brickwork for the northwest wing of the Western High School.

[Opened Oct. 2, 1911.]

Bidders.	Price complete.	Time.
Joseph E. Findley	$2,410	50 working days.
P. J. Bresnahan *	1,500	

Proposals for doing millwork on the northwest wing of the Western High School.

[Opened Oct. 3, 1911.]

Washington Wood Working Co.*	$440.00
Thos. W. Smith	550.76

Proposals for doing stonework at the northwest wing of the Western High School.

[Opened Oct. 5, 1911.]

John Philip Smith	$294.50
William B. Gibb	187.00
R. B. Phelps	258.00

NOTE.—All bids rejected.

Proposals for doing stonework at the northwest wing of the Western High School.

[Opened Oct. 2, 1911.]

Morton & Scott	$220

NOTE.—All bids rejected.

Proposals for doing sheet-metal work at the northwest wing of the Western High School.

[Opened Oct. 5, 1911.]

Bidders.	Price complete.	Time.
Ernest Gichner	$560	30 days.
O. L. Wolfsteiner Co.*	495	
The Mathy Co	565	

Proposal for heating and ventilating for the northwest wing of the Western High School.

[Opened Oct. 5, 1911.]

Bidders.	Price complete.	Time.
The Mathy Co	$714	
J. D. Thompson Co	897	
Ernest Gichner	840	30 days.
The J. A. Oliver Co	700	

NOTE.—All bids rejected.

Proposals for doing electrical work on the northwest wing of the Western High School.

[Opened Oct. 10, 1911.]

F. W. Leonhardt* $70

Proposals for constructing a stable building for the street-cleaning department, to be located on parts of lots 7 to 10, inclusive, square 1043, SE.

[Opened Oct. 11, 1911.]

Bidders.	Price complete.			Alternate—				
	6 months.	4 months.	3 months.	A.	B.	C.	D.	E.
Boyle-Robertson Construction Co	$65,260	$65,875	$67,300	−$3,500	−$476	.....	.....	−$2,800
W. E. Mooney	64,000	64,750	67,995	− 4,500	− 476	+$175	−$67	.....
Geo. E. Wyne	59,500	61,000	.....	− 1,800	− 250	.....	−100	− 2,500
Luebkert Bros	63,700	.....	.....	− 3,850	− 600	+ 140	−100	− 2,475
Wm. H. McCray	67,649	71,409	73,229	− 4,000	− 650	− 400	−400	− 2,800
Diffenbaugh Construction Co	[1] 54,782	[1] 57,500	[1] 59,000	− 2,875	− 475	− 75	−225	− 2,250
Arthur L. Smith & Co	[2] 65,000	.....	.....	− 2,500	− 60	+ 940	−100	− 2,730
Davis Construction Co. (Inc.).*	60,782	61,000	61,782	− 3,443	− 657	− 306	−334	− 1,670
Benj. T. Pillow	63,615	65,565	69,265	− 4,332	− 588	.....	−135	− 1,730

[1] Plus $6,900. [2] 150 working days.

Proposals for constructing cement walks, iron fence, and soiling and sodding at the Cardozo School, First and I Streets SW.

[Opened Oct. 19, 1911.]

R. J. Beall Construction Co $1,332
R. E. Boiseau* 1,290

Proposals for additional work at the Mortuary Building, Tuberculosis Hospital, Washington, D. C.

[Opened Oct. 23, 1911.]

Bidder.	Price complete.	Time.
Wm. Rothwell & Son	$246	15 days.
Joseph H. Gibbons*	215	12 days.

Proposals for retubing three boilers at the District Jail.

[Opened Oct. 25, 1911.]

Bidders.	Price complete.			Time.
	Boiler No. 1.	Boiler No. 2.	Boiler No. 3.	
Webber & Thomas*	$156.40	$156.40	$156.40	.....
G. W. Forsberg	188.00	188.00	188.00	25 days.
W. D. Briscoe	158.50	158.50	158.50	30 days.
J. E. Hurley	180.00	180.00	180.00	4 weeks.

Proposals for steam heating northwest wing Western High School.

[Opened Oct. 25, 1911.]

Bidders.	Price complete.	Time.
John R. Guerin	$730	21 working days.
Talcott & Poore*	475	20 working days.

Proposals for constructing cement walks, coping, retaining wall, wire fence, sodding, etc., school building, Eighth and T Streets NW.

[Opened Nov. 1, 1911.]

Bidders.	Price complete.	Walks, coping, etc.	Soiling and sodding.	Wire fence.	Time.
Benj. B. Knell*	$1,275.00	$900.00	$220.00	$155.00	30 working days.
Wm. Rothwell & Son	1,550.00	1,200.00	185.00	165.00	Do.
Joseph M. Hardy	.....	1,128.20	149.00	160.00	Do.

Proposals for repair of elevator, Public Library.

[Opened Nov. 4, 1911.]

Bidder.	Price complete.	Time.
Otis Elevator Co.*	$40	20 days.

Proposals for doing plastering at the northwest wing of the Western High School.

[Opened Nov. 8, 1911.]

Bidder.	Price complete.	Time.
James F. Carr	$1,100	35 working days.

NOTE.—Bid rejected.

Proposals for ventilating northwest wing, Western High School.

[Opened Nov. 13, 1911.]

Bidders.	Price complete.	Time of completion.
The J. A. Oliver Co	$245.00	15 working days.
J. D. Thompson Co.*	170.00	

Proposal for grading, rolling, and cinder finish, Ivy City School site.

[Opened Nov. 13, 1911.]

Bidders.	Price complete.	Grading.	Rolling.			Cinders.		Time.
			Once.	Twice.	3 times.	Per cubic yard.	Roll once.	
Michael McNamara and Fred Bryan.	$975.00	$0.65	$50.00	$80.00	$100.00	$0.75	$50.00	20 working days.
R. J. Beall Construction Co		.49	24.00	18.00	12.00	1.20	*24.00	30 working days.
Geo. Hyman		*.26						

Proposals for doing superficial grading, rolling, soiling, sodding, coping, wire fence work, and spreading broken stone, Farragut Street School site, Fourteenth and Farragut Streets.

[Opened Nov. 13, 1911.]

Bidders.	Price complete.	Grading.	Soiling and sodding.	Coping.	Wire fence.	Broken stone.
Hoge & Luebkert Co		$220.00	$306.00	$470.00	$750.00	$468.00
R. E. Boiseau[1]	$2,240.00	225.00	280.00	630.00	755.00	350.00
McNamara & Bryan *	1,408.75	160.00	200.75	573.00	270.00	200.00

[1] All or none.

Proposals for furnishing and installing six metal book closets at the Ivy City School No. 167, Ivy City, D. C.

[Opened Nov. 14, 1911.]

Bidders.	Price complete.	Time.
Consolidated Sales Co.*	$240	35 working days.
The General Fireproofing Co	276	90 working days.

Proposals for hauling portable school from grounds of Ivy City School to the grounds of the Deanwood School.

[Opened Nov. 14, 1911.]

The Geo. W. Knox Express Co.*	$40.00
Littlefield, Alvord & Co	71.50
Merchants Transfer & Storage Co	59.00

Proposals for constructing a truck house addition to engine house No. 20, located at the corner of Wisconsin Avenue and Fortieth and Warren Streets NW.

[Opened Nov. 15, 1911.]

Bidders.	Price complete.	Alternate.		
		A.	B.	C.
Benj. B. Knell	$6,162.35	−$260.00	−$175.00	−$37.50
Luebkert Bros	5,482.00	− 162.00	− 50.00	− 80.00
Geo. E. Wyne*	5,350.00	.....	.....	.....
Burgess & Parsons	6,300.00	− 150.00	− 150.00	−125.00
W. E. Mooney	5,579.00	− 162.00	− 195.00	− 91.00

Proposals for the construction of service sewer in Bunker Hill Road between Sargent Road and Otis Street.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	15-inch pipe sewer (per linear foot).
Geo. Hyman*	$0.54	$14.00	$0.69
R. J. Malone	.70	15.00	.65
The Warren F. Brenitzer Co.	.60	13.00	.65
Jas. A. Coyle	.60	14.00	.70
John P. Myers & Co	.95	19.00	.82½
Hines & Hayman	.90	14.00	.70
E. G. Gummel	.80	15.00	.70

Proposals for the construction of service sewers in Thirty-second Street, etc., Massachusetts Avenue Heights.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe (per linear foot).				
			24-inch.	21-inch.	15-inch.	12-inch.	10-inch.
The Warren F. Brenizer Co.*	$0.75	$13.00	$1.10	$1.00	$0.70	$0.60	$0.55
R. H. Williams	.88	14.00	1.25	1.00	.75	.62	.60
Geo. Hyman	.75	14.00	1.20	1.00	.80	.65	.55
R. J. Malone	1.25	16.00	1.20	.95	.75	.60	.55
E. G. Gummel	.75	15.00	1.10	.95	.75	.65	.55

Proposals for the construction of the Petworth Valley outlet sewer.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Masonry (per cubic yard).			6-inch subdrain pipe (per linear foot).
		Concrete "D."	Vitrified brick.	Sewer brick.	
Geo. Hyman	$1.10	$8.50	$20.00	$14.00	$0.30
R. J. Malone	1.00	8.20	22.00	15.00	.30
The Warren F. Brenizer Co	.90	7.50	21.00	13.00	.30
E. G. Gummel*	.75	7.00	20.00	15.00	.30

*Contract awarded.

Proposals for the construction of service sewers in Thirtieth Street, etc., Massachusetts Avenue Heights.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe (per linear foot).				
			24-inch.	21-inch.	18-inch.	15-inch.	10-inch.
R. J. Malone	$1.25	$16.00	$1.20	$0.95	$0.85	$0.75	$0.55
Geo. Hyman	.75	14.00	1.20	1.00	.85	.75	.55
The Warren F. Brenizer Co.	.80	13.00	1.10	1.00	.85	.70	.55
Hines & Hayman	.90	14.00	1.27	.97	.90	.78	.55
E. G. Gummel*	.75	15.00	1.10	.95	.80	.70	.60

Proposals for the construction of sewers in Conduit Road.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	18-inch pipe sewer (per linear foot).
Geo. Hyman	$1.50	$16.00	$1.15
R. J. Malone*	.70	15.00	.85
The Warren F. Brenizer Co	1.10	15.00	.90

Proposals for the construction of Section I, east side intercepting sewer, boundary to Brookland.

[Opened Nov. 17, 1911.]

Bidders.	Ordinary excavation (per cubic yard).	Masonry (per cubic yard).		
		Concrete "D."	Vitrified brick.	Sewer brick.
The Warren F. Brenizer Co	$0.74	$6.75	$23.00	$14.00
Geo. Hyman*	.64	7.25	20.00	13.00
R. J. Malone	.64	7.75	22.00	14.00
John P. Meyers, Elmer J. Schildknecht, Thos. M. McNerney	.82	7.98	21.60	23.00
E. G. Gummel	.80	7.50	22.00	15.00

Proposals for Ruud automatic water heaters, Clow's Gasteam radiators, and gas fixtures for the Georgetown and Rosedale playground shelter houses, Washington, D. C.

[Opened Dec. 1, 1911.]

C. A. Muddiman & Co.* $663.20
Wm. Rothwell & Son 776.00

Proposals for dredging at the Home for the Aged and Infirm, Blue Plains, D. C.

[Opened Dec. 13, 1911.]

W. H. Dorsey:*
Bid A—
Use of dredge, men, and material furnished per hour of dredging ..... per hour .. $4.20
Dredged per hour guaranteed ..... cubic yards .. 90
Deduction for failure to dredge guaranteed amount per hour ..... per cubic yard .. $0.04
Bib B—For excavated material measured in bucket or "clam shell" ..... do $0.075

Time of completion: 75 working days after receipt of order to commence work.

Proposals for electric-lighting system for James Ormond Wilson Normal School, No. 162, corner of Eleventh and Harvard Streets NW.

[Opened Dec. 18, 1911.]

Bidders.	Item 1.	Item 2.	Time.
Strong Electric Co	$4,134	−$44	Specified.
Carroll Electric Co.*	2,975	− 50	150 working days.
Central Electric Co	3,300	− 75	120 working days.
Robt. Smith (Capital Electric Co.)	3,290	+350	Sept. 1, 1912.
Kluckhuhn Bros	3,500	−125	Specified.
National Electric Supply Co	3,993	+ 64	150 working days.

Proposals for heating, ventilating, and electric generating installation, James Ormond Wilson Normal School, No. 162, Harvard and Eleventh Streets NW.

[Opened Dec. 18, 1911.]

Bidders.	Item 1.	Item 2.	Item 3.	Item 4.
Standard Engineering Co	$23,900.00	$20,600.00	−$80.00	+$1,750.00
Thos. C. Basshor	30,841.00	28,400.00	−100.00	+ 1,546.00
York Engineering Co	26,100.00	23,125.00	− 85.00	+ 1,540.00
L. B. Jacobs	30,146.75	26,707.65	− 75.00	+ 2,200.00
Thompson Bros	24,890.00	22,000.00	− 75.00	+ 1,500.00
W. G. Cornell Co.*	21,900.00	19,304.00	− 90.00	+ 2,200.00
Crook-Kries Co	27,600.00	25,300.00	− 75.00	+ 2,750.00
John W. Danforth Co	25,750.00	25,000.00	− 50.00	+ 1,550.00
Evans-Almirall Co	23,376	20,691	− 45.00	+ 1,467.00

Proposals for alterations and cell work at police precinct stations Nos. 1, 4, 6, and 8.

[Opened Dec. 29, 1911.]

Bidders.	Price, complete.	Alternate A (if cells are 7 feet 6 inches long and 7 feet 6 inches high add)—
Wm. Rothwell & Son	$19,736	$202
W. E. Mooney	16,489	200
Geo. E. Wyne	22,700	400
The Champion Iron Co	.....	150
Skinker & Garrett	19,389	385
Burgess & Parsons	18,900	165
Benj. B. Knell*	15,924	175

Proposals for the construction of piling and timber foundation for the outlet sewer at Chicago Street to the established bulkhead line, Anacostia River improvement.

[Opened Jan. 2, 1912.]

Bidders.	Piling driven in place (per linear foot).	Lumber in place (per 1,000 feet b. m.).
Sanford & Brooks	$0.31	$47.00
Clarke & Winston*	.14	34.50
Thos. Banks	.14½	41.25
The Warren F. Brenizer Co	.16	40.00

Proposals for the construction of outlet trunk sewer at Chicago Street to the established bulkhead line, Anacostia River improvement, and connecting trunk sewer from W Street.

[Opened Jan. 2, 1912.]

Bidders.	Ordinary excavation (per cubic yard).	Masonry (per cubic yard).			
		Concrete invert.	Concrete arch.	Vitrified brick.	Sewer brick.
The Warren F. Brenizer Co.:*					
Sec. A: Sewer on piling and platform	.....	$9.00	$8.50	$22.00	$13.50
Sec. B: Sewer in excavation	$1.00	7.00	7.50	21.00	13.50

Proposals for constructing piling and timber foundations for the outlet trunk sewer, Stickfoot Branch drainage to the established bulkhead line, Anacostia River improvement.

[Opened Jan. 2, 1911.]

Bidders.	Piling (per linear foot).	Lumber in place (per 1,000 feet b. m.).
Sanford & Brooks	$0.31	$47.00
Clarke & Winston Co. (Inc.)*	.14	34.50

Proposals for laying asphalt block pavements in the courtyards of the street cleaning stables, located in square 1043.

[Opened Jan. 10, 1912.]

[For laying 3-inch asphalt block pavement with 2-inch concrete base.]

	Per sq. yd.
Washington Asphalt Block & Tile Co	$1.80
J. A. Walsh*	1.70

Proposals for grading Massachusetts Avenue NW. between Wisconsin Avenue and Idaho Avenue.

[Opened Jan. 16, 1912.]

	Price per cubic yard.
Walsh Paving Co	$0.36
George Hyman	.33½
William F. Cush*	.26¾
George B. Mullin	.27¼
Harper & Voight Co	.29

Proposals for reinstalling feed boxes, etc., at the street cleaning department stables.

[Opened Jan. 23, 1912.]

Davis Construction Co $571.00

NOTE.—This bid rejected.

Proposals for crushing about 3,500 cubic yards of stone for use in road construction, Rock Creek Park.

[Opened Feb. 12, 1912.]

	Per cubic yard.
Columbia Granite & Dredging Co	$0.87
Cranford Paving Co	.64
Jno. F. Costello	.85

NOTE.—All bids rejected.

Proposals for laying conduits and wiring for electric lights and telephone in Manual Training School, No. 172, located in square No. 616, O Street, between First and North Capitol Streets.

[Opened Feb. 15, 1912.]

Kluckhuhn & Bro	$570
Central Electric Co	600
Carroll Electric Co.*	510
National Electrical Supply Co	700
Arthur F. Carroll	517
Robert Smith	697

Proposals for constructing a manual training school building, No. 172, to be erected on lots 31 to 38, inclusive, square No. 616, Washington, D. C., O Street, between North Capitol and First Streets NW.

[Opened Feb. 15, 1912.]

Bidders.	Price complete.	Time.	Alternate.				
			A.	B.	C.	D.	E.
							Per letter.
Davis Construction Co	$46,087	Specified	.....	−$170	+$1,155	+$1,650	$7.00
Geo. E. Wyne	44,900	...do	+$500	− 500	+ 700	+ 700	5.00
W. E. Mooney	47,312	...do	+ 830	− 159	.....	+ 600	9.00
Singer-Pentz Co	47,100	6 months	+ 500	− 200	+ 300	+ 700	7.00
Luebkert & Bro	46,450	Specified	+ 565	− 150	+ 795	+ 775	3.50
Marion F. Piper	45,294	5½ months	+ 300	− 260	+ 100	+ 900	6.00
Benj. T. Pillow	46,537	Specified	+ 325	− 135	+ 205	+ 313	5.75
S. H. Maddox & Co	48,000	...do	+ 350	− 165	.....	.....	5.00
Arthur L. Smith & Co	44,996	6¾ months	+ 400	− 150	− 50	+ 600	2.50
Allan T. Howison	44,767	6 months	+ 150	− 510	+ 600	+ 650	5.00
R. T. Humphrey	47,000	Specified	+ 400	− 200	+ 850	.....	6.00
Thos. H. Melton *	43,570	6 months	+ 220	− 200	− 50	+ 500	4.00
Burgess & Parsons	45,500	Specified	+ 650	− 150	600	+ 775	4.00
W. H. McCray	47,200	...do	+ 650	− 200	+ 650	+ 700	5.00
Skinker & Garrett	46,989	6½ months	+ 500	− 79	+ 82	+ 678	4.00

Proposals for quarrying and crushing stone in Rock Creek Park.

[Opened Feb. 29, 1912.]

	Per cubic yard.
Columbia Granite & Dredging Co	$1.80
The Cranford Paving Co	1.95

NOTE.—All bids rejected.

Proposals for furnishing crusher plant and crushing about 1,000 cubic yards of stone to be used in repairing cuts in improved streets.

[Opened Mar. 4, 1912.]

	Per cubic yard.
The Cranford Paving Co.*	$0.70

Proposals for laying cement concrete base (about 2,000 square yards) in Michigan Avenue NW., west of First Street.

[Opened Mar. 28, 1912.]

	Per square yard.
Walsh Paving Co.*	$0.56
Lyons Bros	.74½
Harper & Voigt Co	.70

Proposals for making sewer and water connections at premises 2522 to 2532 E Street NW.

[Opened Apr. 2, 1912.]

S. S. Shedd & Bro	$1,128
Maurice J. Colbert*	900
Coberth, Hanes & White Co	1,076

Proposals for making sewer and water connections at premises 3417 P Street NW.

[Opened Apr. 2, 1912.]

W. S. Martin & Co	$97.90
Wm. Rothwell & Son	93.50
Coberth, Hanes & White Co.*	76.00
S. S. Shedd & Bro. Co	91.00
Maurice J. Colbert	85.00

Proposals for making sewer and water connections at 1220–1222 Bladensburg Road NE.

[Opened Apr. 2, 1912.]

Maurice J. Colbert*	$310.00
Wm. Rothwell & Son	440.00
W. S. Martin & Co	343.85
S. S. Shedd & Bro. Co	396.45
Coberth, Hanes & White Co	320.00

Proposals for making sewer and water connections for premises located on Franklni Street between Twenty-second Street and Mills Avenue NE.

[Opened Apr. 2, 1912.]

Coberth, Hanes & White Co	$141.00
Maurice J. Colbert*	125.00
W. S. Martin & Co	165.75
S. S. Shedd & Bro. Co	151.00

Proposals for constructing wall and steps for connecting Belmont and Fifteenth Streets NW.

[Opened Apr. 8, 1912.]

Bidders.	Bid.					Time.
	A.	B.	C.	D.	E.	
P. F. Gormley Co	$2,646.00	.....	$1,224.00	.....	.....	3 months.
Lake & Bright*	.....	$1,258.00	.....	$826.40	$770.00	2 months.
Arthur M. Poynton Co	2,000.00	1,250.00	1,250.00	1,800.00	1,700.00	3 months.
R. J. Beall Construction Co	2,474.00	2,240.00	1,390.50	1,780.00	1,700.00	Do.

Proposals for reconstructing the stable building for the street cleaning department, situated in the alley between N and O, Ninth, and Tenth Streets NW., Washington, D. C.

[Opened Apr. 10, 1912.]

Bidders.	Price complete.	Alternates.							
		A.	B.	C.	D.	E.	F.	G.	H.
Geo. E. Wyne*	$41,300	+$2,000	−$325	− $900	−$1,150	.....	−$500	+$400	−$325
Melton Construction Co	45,900	+ 1,800	− 300	−1,550	− 1,150	−$50	− 400	+ 375	− 292
Benj. T. Pillow	44,653	+ 1,630	− 432	.....	− 380	− 93	− 250	+ 357	− 250
P. F. Gormley	46,380	+ 2,900	− 300	−1,500	− 1,100	− 20	− 450	+ 600	− 192
Skinker & Garrett	45,972	+ 2,600	− 423	−1,038	− 1,320	+100	− 344	+ 310	− 312
Davis Construction Co. (Inc.)	49,840	+ 1,947	− 436	− 755	− 1,485	.....	− 700	+ 240	− 90
M. F. Piper	44,666	+ 2,100	− 376	−1,396	− 1,156	+186	− 606	+ 406	− 296
Benj. B. Knell	51,900	+ 2,100	− 450	− 900	− 1,600	+ 20	.....	+ 400	.....

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER A.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe laid (per linear foot).	
			21-inch.	18-inch.
The Warren F. Brenizer Co.*	$0.60	$14.00	$0.95	$0.85
R. J. Malone	1.35	16.00	1.25	1.10

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER B.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe.			
			24-inch.	21-inch.	18-inch.	12-inch.
The Warren F. Brenizer Co.*	$0.70	$14.00	$1.10	$0.95	$0.80	$0.70
R. J. Malone	.95	16.00	1.25	1.15	1.10	.90

Proposals for the construction of sewers in the District of Columbia.

Opened Apr. 15, 1912.]

SEWER C.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	24-inch pipe sewer (per linear foot).
The Warren F. Brenizer Co.*	$1.40	$13.00	$1.00
R. J. Malone	1.50	16.00	1.40

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER D.

Bidders.	Ordinary excavation (per cubic yard.)	Masonry (per cubic yard).				24-inch pipe sewer (per linear foot).
		Concrete.	Invert block.	Vitrified brick.	Sewer brick.	
The Warren F. Brenizer Co.*	$0.90	$7.00	$0.70	$20.00	$13.00	$1.00
R. J. Malone	1.75	10.00	2.00	25.00	20.00	1.65

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER E.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	10-inch pipe sewer (per linear foot).
The Warren F. Brenizer Co.*	$1.00	$14.00	$0.60
R. J. Malone	2.00	20.00	1.50

Proposals for constructing sewers in the District of Columbia.

[Opened Apr. 15 1912.]

SEWER F.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe (per linear foot).	
			12-inch.	10-inch.
The Warren F. Brenizer Co.*	$1.10	$14.00	$0.65	$0.60
R. J. Malone	1.00	16.00	.95	.90

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER G.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	10-inch pipe sewer (per linear foot).
The Warren F. Brenizer Co.*	$1.10	$14.00	$0.60
R. J. Malone	1.00	20.00	.95

Proposals for the construction of sewers in the District of Columbia.

[Opened Apr. 15, 1912.]

SEWER H.

Bidders.	Ordinary excavation (per cubic yard).	Sewer brick masonry (per cubic yard).	Sewer pipe (per linear foot).	
			21-inch.	18-inch.
The Warren F. Brenizer Co.*	$0.90	$14.00	$0.90	$0.80
R. J. Malone	1.40	16.00	1.30	1.10

Proposals for constructing a pound and stable building for the health department, to be located on the west side of South Capitol Street, between H and I Streets SW.

[Opened May 3, 1912.]

Bidders.	Price complete.	Alternate.							
		A	B	C	D	E	F	G	H
M. F. Piper	$11,436	−$146	−$456	−$506	.....	−$66	−$246	−$26	+$66
H. J. Montgomery*	10,944	− 110	− 705	− 200	−$50	− 40	− 345	.....	+ 40
H. J. Bieber	12,900	− 110	− 650	− 75	− 50	− 90	− 370	−100	+ 45
The Melton Construction Co. (Inc.)	11,884	− 110	− 625	− 75	− 40	− 25	− 150	− 50	+ 75
Benj. T. Pillow	12,070	− 125	− 580	− 100	− 58	− 30	− 170	− 60	+ 60
Skinker & Garrett	11,634	− 80	− 775	− 190	− 63	− 22	− 331	− 54	+ 62
Davis Construction Co.	12,115	− 76	− 738	− 133	− 64	.....	− 200	− 37	+ 60
Geo. E. Wyne	11,900	− 100	− 650	− 200	.....	.....	− 300	− 75	+ 60
Burgess & Parsons	12,200	− 120	− 650	− 300	− 50	− 30	− 225	.....	+ 60
Wm. Rothwell & Son	12,426	− 116	− 665	− 150	.....	− 66	− 222	− 65	+ 65

Proposals for constructing windows at the Armstrong Manual Training School.

[Opened May 6, 1912.]

Jos. H. Gibbons $592

Bid rejected.

Proposals for additional work at the Armstrong Manual Training School, No. 129.

[Opened May 28, 1912.]

Skinker & Garrett $529
W. H. Childs* 479
Jos. H. Gibbons 592
Wm. Rothwell & Son 634

Proposals for doing plumbing work at the Western High School.

[Opened June 18, 1912.]

Wm. Rothwell & Son:*	
Complete	$3,163
Alternate A	+211

Proposals for hauling away refuse from markets.

[Opened June 19, 1912.]

Bidders.	Farmers' Produce Market.	Eastern Market.	Western Market.	Georgetown Market.
	Per month.	*Per month.*	*Per month.*	*Per month.*
Thomas Regan	$50	$35	$25	$9
Dennis J. McCarthy*	49	28	20	18

Proposals for doing plumbing work at the Smallpox Hospital.

[Opened June 19, 1912.]

Maurice J. Colbert*	$82
Wm. Rothwell & Son	130

Proposals for furnishing f. o. b. Washington, D. C., two cast-iron front lamp posts and one cast-iron side bracket, complete.

[Opened June 20, 1912.]

Bidders.	Price complete.	Time of delivery.
Morris Iron Co	$170	8 weeks.
The Alexandria Iron Works	325	7 weeks.
John L. Gaumer Co.*	170	4 weeks.

Proposals for making downspout connection at No. 330 and 332 E Street SE.

[Opened June 28, 1912.]

Wm. Rothwell & Son*	$35
Maurice J. Colbert	40
Foley & Curtin	80

Proposals for making downspout connection at No. 605 A Street SE.

[Opened June 28, 1912.]

Wm. Rothwell & Son	$15
Maurice J. Colbert	16
Foley & Curtin	25

NOTE.—All bids rejected.

Proposals for making sewer and water connections at 528 Third Street NE.

[Opened June 28, 1912.]

Wm. Rothwell & Son	$238
Coberth, Hanes & White Co.*	194
Maurice J. Colbert	214
Foley & Curtin	245

Proposals for grading certain streets.

[Opened June 29, 1912.]

G. B. Mullin	$0.28⅜
Geo. Hyman*	.22 3/16
E. G. Gummel	.37½
Harper & Voigt	.37½

Proposals—New bids submitted by three lowest bidders on Manual Training School No. 172.

[Opened Feb. 21, 1912.]

Bidders.	Price complete.	Alternate.						
		A	B	C	D	E	F1	F2
Melton Construction Co.*	$43,570.00	−$80.00	−$450.00	−$50.00	+$500.00	*Per letter.* $4.00	−$870.00	.....
Allan T. Howison	44,767.00	+150.00	− 510.00	+600.00	+650.00	5.00	−875.00	−$875.00
Geo. E. Wyne	.....	.....	.....	.....	.....	.....	−903.00	.....

Bidders.	Alternate.						
	G	H	I	J	K	L	M
Melton Construction Co.*	−$780.00	−$646.00	−$200.00	−$220.00	−$190.00	−$340.00	−$65.00
Allan T. Howison	− 666.00	− 667.00	− 235.00	− 276.00	− 220.00	− 280.00	− 32.00
Geo. E. Wyne	−1,100.00	− 400.00	− 250.00	− 240.00	− 260.00	− 468.00	−200.00

Bidders.	Alternate.						
	N	O	P	Q	R	S	T
Melton Construction Co.*	−$75.00	−$12.00	−$283.00	−$100.00	−$125.00	−$300.00	−$65.00
Allan T. Howison	−102.50	− 66.00	− 332.00	− 210.00	− 185.00	[1] 297.00	−125.00
Geo. E. Wyne	−100.00	− 25.00	− 626.00	− 175.00	− 117.00	− 400.00	−100.00

[1] If alternate F is accepted, reduction on alternate S will be $427.

NOTES.—If allowed to buy cement in open market, subject to approval of municipal architect, will deduct $450.

If sanitary base is omitted, as specified, deduct $150.

STATEMENT OF CONTRACTS.

Contracts entered into for the District of Columbia during the fiscal year 1912.

1. HIGHWAY IMPROVEMENTS.

No.	Name of contractor.	Nature of contract.
4948	Harper & Voigt Co.	Grading and improving streets, etc., 1912.
4968	Edward G. Gummel	Grading Rhode Island Avenue and Irving Street.
5053	Woodbury Granite Co.	Bases for flag staffs, Union Station Plaza.
5088	Wm. F. Cush	Grading Massachusetts Avenue, Wisconsin to Idaho Avenues.
5107	Walsh Paving Co.	Laying cement concrete base on Michigan Avenue west of First Street.
5113	Lake & Bright	Retaining wall and steps, Fifteenth and Belmont Streets.

2. SEWER CONSTRUCTION.

4958	The Warren F. Brenizer Co.	Construction section 1, Anacostia main intercepting sewer.
4961	George Hyman	Rock Creek main intercepting sewer.
4995	The Warren F. Brenizer Co.	Massachusetts Avenue trunk sewer.
5058	Edward G. Gummel	Sewers, Massachusetts Avenue Heights.
5059	Richard J. Malone	Sewers in Conduit Road, etc.
5060	The Warren F. Brenizer Co.	Sewers, Massachusetts Avenue Heights.
5061	Edward G. Gummel	Petworth Valley outlet sewer.
5068	George Hyman	Section I, east side intercepting sewer.
5069	do	Sewer, Bunker Hill Road, Sargent Road to Otis Street.
5083	Clarke & Winston Co. (Inc.)	Platform for outlet sewer, Stickfoot Branch.
5084	do	Platform for outlet sewer, Chicago Street.
5085	The Warren F. Brenizer Co.	Outlet sewer, Anacostia.
5110	do	Sewers A to H, various locations.

Contracts entered into for the District of Columbia during the fiscal year 1912—Continued.

3. MATERIAL AND HAULING.

No.	Name of contractor.	Nature of contract.
4947	Grove Lime & Coal Co	Furnishing limestone and limestone screenings.
4958	Potomac River Clay Works	Terra-cotta sewer pipe.
4989	Lynchburg Foundry Co	Cast-iron water pipe specials.
4991	Solvay Process Co	Calcium chloride.
4992	Hays Manufacturing Co	Brass union for water department.
5005	Barber Asphalt Paving Co	Furnishing bituminous binder.
5012	Barrett Manufacturing C	Coal-tar paving pitch.
5013	do	Bituminous macadam binder.
5014	Standard Oil Co. of New York	Asphalt binder.
5015	Indian Refining Co	Road oil.
5016	Standard Oil Co	Do.
5017	do	Do.
5018	Sun Co	Do.
5022	Good Roads Improvement Co	Do.
5023	Headley Good Roads Co	Do.
5024	Stuart R. Carr & Co	Iron castings for water department.
5025	Standard Asphalt & Rubber Co	Asphalt binder.
5026	Standard Oil Co	Road oil.
5028	Cuyler & Mohler	Galvanized-iron pipe.
5029	The Texas Co	Road oil.
5036	Potomac Brick Co	Arch brick for Western High School.
5054	North Carolina Granite Corporation	Curb.
5055	Gilf Refining Co	Road-oil.
5070	Lewis Hopfenmaier	Furnishing pig lead.
5071	Lynchburg Foundry Co	Cast-iron water pipe.
5095	Barrett Manufacturing Co	Paving tar.
5099	The Cranford Paving Co	Crushing stone.
5100	The Standard Lime & Stone Co	Limestone and screenings at Chevy Chase.
5112	Baltimore Clay Products Co	Arch fire brick for use at workhouse.
5118	Robinson Clay Products Co	Fire brick for use at workhouse.
5124	Thos. Somerville Co	Pipe fittings for water department.
5126	Columbia Granite & Dredging Corporation.	Limestone screenings.

4. BUILDING AND BUILDING REPAIR.

4944	The Davis Construction Co	Additions and alterations at Armstrong Manual Training School.
4946	Allan T. Howison	Constructing James Ormond Wilson Normal School.
4964	John E. Hurley	Smokestack, Grant School.
4965	Skinker & Garrett	Constructing school building No. 166, Randle Highlands.
4972	Coberth, Hanes & White Co	Boiler at Eastern High School.
4982	Sanford & Brooks Co	Constructing sand wharf.
5004	C. L. Saers & Son	Moving Burrville and Military Road schools.
5009	R. Eugene Bolseau	Constructing vault and steps at Grant School.
5035	P. J. Bresnahan	Brick work, northwest wing, Western High School.
5039	Davis Construction Co	Construction of street cleaning department stable, square 1043.
5043	Skinker & Garrett	Construction of Burrville School Building.
5044	do	Construction of Military Road School Building.
5051	Benjamin B. Knell	Cement walks, grading, etc., Grover Cleveland School, Eighth and T Streets.
5052	R. Eugene Bolseau	Cement walks, grading, etc., Cardozo School Building.
5062	George E. Wyne	Construction truck house addition at Engine House No. 20.
5064	McNamara & Bryan	Grading grounds, etc., Joseph Rodman West School.
5078	Carroll Electric Co	Wiring at Eastern High School.
5080	Benjamin B. Knell	Alterations at police precinct stations 1, 4, 6, and 8.
5081	W. G. Cornell Co	Heating plant, James Ormond Wilson Normal School.
5086	Carroll Electric Co	Lighting system, James Ormond Wilson Normal School.
5090	Walsh Paving Co	Paving court yards, street cleaning stables, square 1043.
5098	J. D. Thompson Co	Repairing tile roof of District Building.
5103	Carroll Electric Co	Lighting and telephone system, wiring for, at Manual Training School, No. 172.
5106	The Melton Construction Co	Constructing manual training school, No. 172.
5109	C. K. Kennicutt	Painting window frames, District Building.
5111	George E. Wyne	Reconstructing street cleaning department stable, square 367.
5114	American Mosaic Co	Laying tile floor, rooms 200 D2, 202, District Building
5120	Herman J. Montgomery	Pound and stable building for health department.
5132	Zellers & Co	Remodeling heating plant, Columbia Hospital.
5133	O. R. Evans & Bro	Lighting fixtures, Armstrong Manual Training School

Contracts entered into for the District of Columbia during the fiscal year 1912—Continued.

5. GENERAL SUPPLIES.

No.	Name of contractor.	Nature of contract.
4939	Lutz & Co	Saddlery.
4940	Crane Co	Plumbing supplies.
4941	Columbia Oil Co	Oils, etc.
4943	Thos. Somerville Co	Plumbing supplies and hardware.
4945	The Hoge & McDowell Co	Forage.
4949	Z. D. Gilman	Drugs.
4951	J. L. Hammett Co	Kindergarten supplies.
4952	Abraham Baldwin	Dry goods.
4953	Barber & Ross	Hardware, oils, etc.
4954	Harry Kaufman	Shoes and dry goods.
4956	Peerless Rubber Manufacturing Co	Plumbing supplies and hardware.
4959	Mackall Bros	Drugs.
4963	Consolidated Sales Co	Stationery, plumbing supplies, etc.
4966	E. B. Adams	House furnishings and hardware.
4967	John Wanamaker	Furniture.
4971	R. Carter Ballantyne	Stationery and schoolbooks.
4973	Miller-Clagett Co	Groceries.
4974	Mathers-Lamm Paper Co	Stationery.
4975	Lansburgh & Bro	Dry goods.
4976	Melville D. Lindsay	Hardware, plumbing supplies, and dry goods.
4977	E. J. Murphy Co	Paints, oils, etc.
4979	R. P. Clarke Co	Dry goods.
4981	Globe-Wernicke Co	Furniture.
4987	Louis Hartig	Hardware and plumbing supplies.
4988	Dulin & Martin	House furnishings and hardware.
4990	The Prang Co	Stationery, schoolbooks, and paints.
4994	American Book Co	Schoolbooks.
4996	D. Appleton & Co	Do.
4997	James B. Lambie Co	Hardware and plumbing supplies.
4999	Chas. G. Stott & Co	Stationery.
5001	W. B. Moses & Sons	Furniture.
5003	George F. Muth & Co	Stationery, hardware, paints, etc.
5008	Julius Lansburgh Furniture & Carpet Co.	Furniture.
5020	Fred S. Schmidt	Stationery.
5034	Martin Wiegand	Lumber.

6. MISCELLANEOUS.

4938	Eureka Fire Hose Manufacturing Co	Fire hose for Business High School.
4942	Hersey Manufacturing Co	2,500 water meters.
4955	James W. Bean	Furnishing wagons for workhouse.
4957	Pittsburgh Meter Co	2,500 water meters.
4960	Derby Desk Co	Display cases, Business High School.
4962	General Electric Co	Motor generator sets for McKinley Manual Training School.
4969	Lewis Hopfenmaier	Purchase of old material.
4970	Ginn & Co	Schoolbooks.
4978	W. B. Moses & Sons	Window shades for branch library, Takoma Park.
4980	Derby Desk Co	Equipment for branch library, Takoma Park.
4983	R. Carter Ballantyne	Schoolbooks.
4984	do	Do.
4993	Scott, Foresman & Co	Do.
4998	C. G. Dade & Co	Furnishing milk and cream.
5000	Congressional Garage Co	2 Wilcox motor trucks for water department.
5002	Fred S. Gichner	Street tree guards.
5006	Melville D. Lindsay	Furnishing rubber strips for street-cleaning department.
5010	Miller Bros. Automobile & Supply House.	Hire of motor car for coroner, District of Columbia.
5011	do	Hire of 3 motorcycles for electrical department.
5019	Washington Rubber Co	Fire hose for sewer division.
5021	Silver, Burdett & Co	Schoolbooks.
5027	Anchor Post Iron Works	Wire fencing for Reno Reservoir.
5030	The Avery Scale Co	Coal-weighing scale for water department pumping station.
5031	Thos. C. Basshor & Co	Steam header for workhouse.
5032	Baltimore & Ohio R. R. Co	Siding and trestle at Second and N Streets NE.
5033	The Stevenson Co	Drying pans, etc., brick-making plant, Occoquan, Va.
5037	Edward Darby & Sons Co	Steel lockers for Central and McKinley Manual Training Schools.
5038	Standard Underground & Cable Co	Combination signal and telephone cable.
5040	The Globe Wernicke Co	Cases for drawing room, Western High School.
5041	Edward Darby & Sons Co	Steel lockers for Armstrong Manual Training School.
5042	Merritt & Co	Steel lockers for M Street and Western High Schools.
5045	Western Electric Co	Signal and telephone cable.
5046	Cleveland Seating Co	Assembly-hall chairs, Western High School.
5047	Manning, Maxwell & Moore	Lathe for Armstrong Manual Training School.
5049	Aumen Machinery & Supply Co	Motor-driven crank shaper for fire department.
5050	The Ohio Ceramic Engineering Co	Dryer cars for brick plant, Occoquan, Va.
5056	Parker, Bridget & Co	Suits, caps, etc.
5057	B. F. Sturtevant Co	Equipment for forge shop, McKinley Manual Training School.
5063	Scott, Foresman & Co	Schoolbooks.

Contracts entered into for the District of Columbia during the fiscal year 1912—Continued.

6. MISCELLANEOUS—Continued.

No.	Name of contractor.	Name of contract.
5065	C. C. C. Fire Hose & Rubber Co	Fire hose for sewers division.
5066	The Ahrens-Fox Fire Engine Co	Self-propelled pumping engine for fire department.
5067	A. Phimister Procter	Buffaloes for Q Street Bridge.
5072	Thos. C. Basshor & Co	Electric generator for Armstrong Manual Training School.
5073	The Brownell Co	Engines for Western High School.
5074	The Ahrens-Fox Fire Engine Co	Repairing fire engine No. 15.
5075	William H. Dorsey	Dredging for Home for Aged and Infirm, Blue Plains, D. C.
5076	Charles Scribner's Sons (Inc.)	Schoolbooks.
5077	Kanawha Chemical Fire Engine Co	Chemical and hose combination wagon for fire department.
5079	The Iron Works Co	Chain grate stokers, Bryant Street Pumping Station.
5082	Ames Iron Works	Engine for Armstrong Manual Training School.
5087	E. H. Sheldon & Co.	Work benches, McKinley Manual Training School.
5089	Decarie Incinerator Co	Incinerator for sewage pumping station.
5091	Steacy-Schmidt Manufacturing Co	Lamp-posts.
5092	Mortimer Duperow	Circuit breakers for McKinley Manual Training School.
5093	John L. Gaumer Co	Street lamps, sign frames, etc.
5094	The Good Roads Machinery Co	Oil-distributing machine.
5096	Blackall & Baldwin Co	Pump and motor for fountain in Union Station Plaza.
5097	The Morris Iron Works	Cast-iron lamp-posts.
5101	Hugo Worch	Pianos for schools.
5102	L. M. Booth Co	Water-softening plant, water department pumping station.
5104	Philip Carey Co	Pipe covering for use at workhouse.
5105	Fitzhenry-Guptill Co	Tree-spraying machine.
5108	Maurice J. Colbert	Sewer and water connections 2522 to 2532 E Street NW.
5115	Kerr Turbine Co	Turbine and generator for water department.
5116	Jenkins Bros	1,500 rubber pump valves.
5117	Bowles Motor Sales Co	Motor car for fire department.
5119	Western Electric Co	Combination cable.
5121	W. A. Smoot & Co. (Inc.)	Coal for use at workhouse.
5122	Cincinnati Lathe & Tool Co	Lathe for repair department.
5123	Wm. J. Oliver Manufacturing Co	Metal wagon bodies for sewer division.
5125	C. M. Woolf & Co. (Inc.)	Flushing machine for street-cleaning department.
5127	The Ahrens-Fox Fire Engine Co	Repairing fire engine.
5128	Lewis Hopfenmaier	Purchase of old material, 1913.
5129	Haines, Jones & Cadbury Co	Water-closets.
5130	Manning, Maxwell & Moore	Crane for sewer division.
5131	Fabric Fire Hose Co	Fire hose for water department.

REPORT OF THE WHARF COMMITTEE.

WASHINGTON, D. C., *September 26, 1912.*

SIR: The wharf committee has the honor to submit the following report of its operations during the fiscal year ended June 30, 1912.

Accompanying the report is a list of the wharf property now under lease on the Potomac River, Anacostia River, or Eastern Branch, and the James Creek Canal. The rentals received from the Potomac River wharves amount to $17,183; from the Anacostia River wharves $698.25; and from James Creek Canal $1,582.75, making the total amount received annually for wharf property $19,464.

AVAILABLE WATER FRONTAGE.

The actual water frontage in the District of Columbia, with the exception of canals devoted to commerce, is about 2 miles. The total available water frontage, exclusive of canals, which is practicable of commercial development, is about 18 miles; this frontage, however, includes the portion set apart for parks and purposes of the United States—about 8 miles.

WHARVES ALONG THE WASHINGTON CHANNEL.

The most important wharf property under lease is that along the Washington Channel. This has a total frontage on the city side of 9,275 linear feet, of which 4,675 linear feet, between the grounds of the War College and Engineer School, and the south curb line of N Street south, is under the jurisdiction of the United States, being under the immediate control of the Chief of Engineers, United States Army. The remaining 4,600 feet, between the south curb line of N Street south and Fourteenth Street SW., is placed by law under the jurisdiction of the commissioners for leasing and for municipal purposes. Along this frontage are located the harbor police station, dock of the harbor boat, dock of the fire boat, the District morgue, and a District sand and gravel yard, connected with which is a District property yard. The lower portion of this frontage is used for river excursion traffic and steamboat traffic between Washington, Baltimore, Norfolk, and points along the lower river. Along the upper portion are located wood and lumber yards, ice houses, and the fish wharf.

The larger wharves along this frontage were leased March 15, 1903, and most of the leases will expire on March 15, 1913. At the expiration of this lease period it is proposed to grant new leases at an increased rental. Two such leases which expired during the year were increased from $1,500 per annum to $2,345 per annum, and from $900 per annum to $2,300 per annum. The leases which expire on March 15 next will be renewed on a similar basis of increase.

FISH WHARF.

Along this frontage is located the fish wharf, which was leased to W. W. Riley March 15, 1903, and which expired March 15, 1908. This lease provided for a renewal for an additional period of five years, provided the terms of the original lease had been complied with. The commissioners decided that the lessee had not fulfilled the conditions of his lease and requested him to vacate the premises. He refused to do so and obtained an injunction. The ensuing legal proceedings have dragged along since that date and no decision has yet been rendered. The additional period which the lessee claimed, however, will expire on March 15, 1913, and at that time it is recommended that this fish wharf be operated as a municipal fish wharf and market, under the direction of the superintendent of weights and measures, in the same manner as other city markets are operated. This committee has recommended that an item be included in the estimates of the commissioners for the next fiscal year, providing for a market master and wharfinger to take charge of this space, collect rentals, wharfage and dockage fees, and operate the same as a market. Necessarily, improvements will have to be made in the present deplorable and insanitary conditions, and it has been recommended that a committee be appointed by the commissioners to consist of the chairman of the wharf committee, the health officer, the municipal architect, and the superintendent of weights and measures, to prepare plans and estimates for a model fish market and wharf to be erected in place of the present ramshackle buildings occupying this site. The amount of revenue which it is confidently expected can be obtained through the operation of this market under municipal control will amply justify the improvements proposed. On this space are three wharves, which can also be used as public wharves, where those shippers who have no wharfage facilities may land cargoes and pay wharfage and dockage fees.

WHARVES ALONG THE ANACOSTIA RIVER.

This frontage is largely undeveloped, owing to the uncertainty of ownership of the abutting land and riparian rights. Eight leases to private parties have, however, been made for land abutting on the river at the foot of streets where there is no question of title involved. There is also located on this frontage the sewerage pumping station, and a wharf recently constructed adjacent thereto, which is used as a property yard for the receipt and transport of material from Occoquan, Va.

Under authority of an act of Congress approved April 27, 1912, entitled, "An act providing for the protection of the interests of the United States in lands and waters confronting any part of the Potomac River, the Anacostia River, or Eastern Branch, or Rock Creek and lands adjacent thereto," the Attorney General is proceeding to establish the rights of the United States to this frontage, and when the legal questions involving the right of ownership are decided by reason of these suits, it is believed that the greater portion of the frontage will be found to be possessed in the United States and will be available for leasing.

WHARVES ALONG GEORGETOWN CHANNEL.

All of the wharf property along this frontage is under private control, with the exception of the foot of streets; two leases, however, have been executed, one with the Cranford Paving Co. for the foot of Thirty-third Street, and the other with the J. Maury Dove Co. at the foot of G Street. The foot of Thirtieth Street is used as a depot for the removal of street sweepings to the workhouse site at Occoquan, Va.

JAMES CREEK CANAL.

This canal, which formerly extended from G Street to the Anacostia River, has been filled to N Street. From N to P Streets, a distance of about 1,000 feet, the frontage on both sides of the canal is under lease. From P Street to the outlet of the canal, a distance of about 3,000 feet, it extends along the grounds of the War College and Engineer School. This portion of the canal is very much in need of dredging, as shipping can only enter and leave it at times of high tide. It is believed that the revenue which is derived from leases along this frontage, amounting to about $1,600 per annum, would justify the dredging of the canal and the rebuilding of the walls so as to make it more available for commercial purposes. Two large lumber yards occupy public space adjacent thereto, and there are also established here wood yards and a brick yard.

The commissioners were given control of the canal and the public space adjacent thereto by the District appropriation act approved July 1, 1902, which authorized the commissioners to fence the canal and lease the public space adjacent thereto for commercial use. By the District appropriation act approved June 26, 1912, the commissioners were authorized to establish a District pound and stable on public space adjacent to this canal, and this building has recently been completed, it being erected at South Capitol and I Streets SW.

IMPROVEMENT OF THE HARBOR FRONT.

The plans for the improvement of the harbor front which were forwarded to Congress by the commissioners under date of May 23, 1908, and printed as Senate Document 519, Sixtieth Congress, first session, have not yet received the approval of that body, nor has any appropriation been made to carry them out. Owing to the uncertainty regarding what plans of improvement will be adopted for this water frontage, no improvement in the structures can well be made. That there is much need for this improvement is apparent to any one who will visit the water front, where there exist numerous frame structures, laid out without any scheme or plan, and many of them in a bad state of repair. Your committee believes that Congress should be urged to give consideration to this matter at an early date, in order that the approach to the city of Washington by water may be a credit to the city, instead of being as it is now, a very deplorable sight. No extensive improvements can be expected by the lessees until some plan of improvement is adopted, and it is believed that if an appropriation were made to rebuild the entire frontage along the Washington Channel, a proper return on the investment could be received in the way of rentals, and besides the appearance of this section of the city would be much improved.

DANIEL E. GARGES, *Chairman*,
T. J. C. BAILY, Jr.,
RUSSELL DEAN,
Wharf Committee.

Lieut. Col. WILLIAM V. JUDSON,
Engineer Commissioner, District of Columbia.

List of wharf property under lease June 30, 1912.

POTOMAC RIVER FRONT.

Name of lessee.	Location.	Expires.	Water frontage.	Area.	Rental per year.
			Lin. ft.	*Sq. ft.*	
American Ice Co	Sec. 2, structures 54 to 58, 60 to 67, and 78 to 88.	Mar. 15, 1913	496	102,100	$2,500.00
Conrad F. Bennett	Sec. 2, structures 89 to 97	do	54	7,500	200.00
Cranford Paving Co	Foot of 31st St. NW	Feb. 1, 1918	53		240.00
Capital Yacht Club	Foot of 9th St. SW., between structures 39 and 41.	June 30, 1913	24	2,080	75.00
Church & Wimsatt	Sec. 2, structures 34 and 35	Mar. 15, 1913	80	18,000	720.00
L. A. Clarke & Son	Sec. 2, structures 68 to 77, inclusive, and 70½.	May 1, 1913	280	45,800	[1] 750.00
Colonial Beach Co	Sec. 1, structures 31 to 37, inclusive.	Mar. 15, 1913	132	8,000	300.00
Dawson Boat Co	Sec. 2, structures 39 and 40	do	40	2,400	70.00
J. Maury Dove Co	Sec. 3, structures 12 to 20, inclusive.	do.[1]	168	38,000	750.00
Do	Foot of G St. NW	Monthly	100		120.00
G. W. Forsberg	Sec. 2, structures 22 to 33, except 24, and 118, 119, 120.	Mar. 15, 1913	156	18,000	733.00
W. E. Garner et al	Sec. 2, structures 36, 37, and 38	Mar. 15, 1914	44	3,320	100.00
Ed. J. Gardiner	Sec. 3, structure 21	Oct. 1, 1912	20	1,600	75.00
Carl J. F. Graff	Foot of 13½ St	Mar. 15, 1913	126	11,015	440.00
Wm. C. Hamburg	Sec. 3, structire 23	Apr. 23, 1913	18	1,440	60.00
Independent Steamboat & Barge Co.	Sec. 1, structures 26 to 30	Oct. 1, 1912	120	7,000	300.00
Gen. John A. Johnston	Sec. 2, between structures 41 and 42.	Nov. 15, 1912	24		75.00
Johnson & Wimsatt	Sec. 3, structures 5 to 11, inclusive	Mar. 15, 1913	190	43,500	900.00
John Miller	Sec. 3, structures 24 to 27, inclusive.	do	200	26,600	[2] 300.00
Mount Vernon & Marshall Hall Steamboat Co.	Sec. 1, structures 59, 62, 63, and 64.	do	125	10,000	600.00
Norfolk & Washington Steamboat Co.	Sec. 1, structures 41 to 49, inclusive, and 57 to 69, inclusive.	do	220	20,300	1,200.00
Do	Sec. 1, structures 60, and 65 to 72, inclusive.	Dec. 31, 1916	190	44,000	2,345.00

[1] Also $750 in improvements. [2] Also $300 in improvements.

List of wharf property under lease June 30, 1912—Continued.

POTOMAC RIVER FRONT.

Name of lessee.	Location.	Expires.	Water frontage.	Area.	Rental per year.
			Lin. ft.	*Sq. ft.*	
Potomac & Chesapeake Steamboat Co.	Sec. 2, structures 11, 12, 13, 14, 15, 16, 17, 17½, 18, 19, 20, and 21.	Mar. 15, 1913	198	35,600	$810.00
Wm. A Ragan	Sec. 3, structure 22	do	45	2,000	100.00
Lewis E. Smoot	Foot of 14th St. SW	May 15, 1913	233	27,960	1,120.00
Jos. P. Stephenson, trading as Stephenson Bros.	Sec. 2, structures 1 to 10, inclusive.	Jan. 31, 1917	300	59,900	2,300.00
Fish wharf, formerly leased to W. W. Riley, now in litigation.	Sec. 2, structures 98 to 129, inclusive; sec. 3, structures 1 to 4, inclusive.		496	117,800	
District of Columbia sand wharf.	Sec. 2, structures 41, 42, and 43 to 53, inclusive.		183	26,648	
District of Columbia fireboat wharf.	Sec. 1, structures 39 and 40				
District of Columbia morgue.	Sec. 1, structures 41 and 42				
District of Columbia harbormaster's wharf.	Sec. 1, structure 38				
Total					17,183.00

ANACOSTIA RIVER (EASTERN BRANCH).

Name of lessee.	Location.	Expires.	Water frontage.	Rental per year.
			Feet.	
Harry D. Bailey	North side, just west of Anacostia Bridge, to west abutment wall of old Anacostia Bridge.	Oct. 18, 1912	81	$76.00
C. C. Carlsen	Water front, between building lines of 4th St. SE.	June 30, 1913	50	50.00
Edward S. Dean	Water front, between the lines of N St. SE.	(1)		67.50
Eastern Power Boat Club	Directly west of the west abutment of the old Anacostia Bridge.	June 30, 1913	93	162.75
Thomas Keely	Water frontage on south bank of, near lot 3, block 7, Twining City, D. C.	Aug. 1, 1911 [2]	10	
Samuel E. Masson	Water frontage on south bank of river, foot of Naylor St. SE.	Apr. 14, 1912 [2]	60	10.00
District of Columbia, sewer division.	Foot of 1st St. SE., opposite lot 1, square south of square 744.		198	
Thomas W. Smith			132	
Standard Oil Co.	Square south of square 744	Nov. 5, 1914	132	132.00
	Water front, between building lines of Q St. SE.	Dec. 31, 1915		200.00
United States, Superintendent Capitol Buildings and Grounds.	Foot of 1st St. SE., opposite square south of square 744.		40	
Total				698.25

JAMES CREEK CANAL.

W. A. Anderson	Part of parcel 8	Oct. 1, 1912	127	$158.75
L. A. Clarke & Son	Parcels 5, 7, and 11	June 30, 1912	277	207.75
Eugene Hall	Parcel 30, expired	Feb. 12, 1912	20	10.00
Lewis Jefferson	Parcel 9	June 30, 1912	100	75.00
Robert Murphy	Parcels 1 and 3	do	445	173.50
Henry Raum	Parcel 31	May 7, 1913	100	50.00
George C. Taylor	Part of parcel No. 8	Feb. 1, 1913	195	171.25
Do	South part of parcel No. 8, and parcels Nos. 4 and 6.	Nov. 15, 1912	136	225.00
Urban & Bradley	Parcel 13	Mar. 15, 1912	125	84.00
Washington Brick & Terra Cotta Co.	Parcels 2 and 10	June 30, 1912	570	427.50
Total				1,582.75

[1] Monthly lease. [2] Expired.

TOTAL RENTALS.

Potomac River front	$17,183.00
Anacostia River front	698.25
James Creek Canal	1,582.75
Total	19,464.00

REPORT OF THE BOARD FOR THE CONDEMNATION OF INSANITARY BUILDINGS.

AUGUST 15, 1912.

GENTLEMEN: We have the honor to submit the following report of the transactions of the board for the condemnation of insanitary buildings for the year ending June 30, 1912:

EXAMINED.

	1907	1908	1909	1910	1911	1912
Buildings in alleys	175	156	79	94	78	85
Buildings in streets	274	454	349	315	315	356
Total	449	510	428	409	393	441

DEMOLISHED.

Buildings in alleys	89	124	52	68	42	47
Buildings in streets	115	217	179	154	145	271
Total	204	341	231	222	187	318

REPAIRED.

Buildings in alleys	33	64	50	97	71	38
Buildings in streets	61	66	115	187	142	107
Total	94	130	165	284	213	145

Total number of houses acted upon since the creation of the board for the condemnation of insanitary buildings up to and including June 30, 1912.

	Examined.	Demolished.	Repaired.	Pending.
Buildings in alleys	667	442	353	27
Buildings in streets	1,963	1,081	678	69
Total	2,630	1,503	1,031	96

Cases referred for appropriate action under existing regulations	473
Total number of meetings of the board for the condemnation of insanitary buildings for the fiscal year ending June 30, 1912	20
Preliminary notices served	203
Condemnation notices served	117
Condemnation signs affixed to buildings	81
Total	401
Estimated number of tenants in streets and alleys required to secure other quarters through action on the part of the board for the condemnation of insanitary buildings for the year ending June 30, 1912	795
Estimated total number of tenants in streets and alleys required to secure other quarters through action on the part of the board for the condemnation of insanitary buildings since the creation of the board	4,325
Estimated number of tenants in streets and alleys benefited by repairs through action on the part of the board for the condemnation of insanitary buildings for the year ending June 30, 1912	498
Estimated total number of tenants benefited by repairs to dwellings in streets and alleys since the creation of the board for the condemnation of insanitary buildings	3,711
Inspections and miscellaneous visits made during year in connection with the examination of buildings and service of notices	3,632
Assessed valuation of improvements removed in alleys during fiscal year 1912	$3,800
Assessed valuation of improvements removed in streets during fiscal year 1912	28,600
Total assessed valuation of property demolished in streets and alleys for the fiscal year 1912	$32,400

In calculating the assessed valuation of property demolished, no consideration has been given to the value of the land, which in all cases greatly exceeds the value of the improvements located thereon. The improvements are taken at the assessed valuation, which is supposed to be two-thirds of the actual value.

Two cases have been referred to the corporation counsel for appropriate action in the police court, which resulted in the vacation or removal of the buildings in question.

One case involving three houses is now pending before the supreme court of the District, and it is impossible at the present time to determine the outcome.

Special attention has been and is still being given to structures unprovided with sewer and water connections with a view of assisting the health department in eliminating box privies by making the owner or owners provide such connections or remove the structure if its condition does not warrant the expense of connecting it with public sewer and water mains. In the enforcement of the regulations requiring proper sanitary conditions in premises where food is served to transient customers it has been necessary for the board to make examination of many lunch rooms, oyster houses, and other places where food was prepared, in order to have the buildings placed in a sanitary condition, demolished, or vacated for the purposes used.

Seven hundred and eight of the tenants affected by the removal of condemned buildings were colored and 87 were white. Many of the tenants have gone and others are still going to the suburbs of the District, Maryland, and Virginia and are renting or purchasing cheap homes which, with the larger-sized lots, provide much better facilities for light and ventilation. The majority of houses located in the alleys at the present time are not condemnable to destruction, on account of their structural character, and many are kept in repair because of notices served from time to time as conditions warrant.

Credit is due, generally, to the owners, both resident and nonresident, and the real estate agents throughout the city for prompt compliance with the orders of the board and also for assistance rendered in many cases of unrecorded transfers, failure to locate owners through the directory, and other causes which rendered the service of notices peculiarly difficult. Owners and agents have taken the initiative in many cases and applied for building permits to make the necessary changes and alterations to place the buildings in a habitable and sanitary condition, which otherwise would have necessitated service of notice on the part of the board.

During the fiscal year ending June 30, 1912, it has been necessary for the board to demolish 14 houses because of the refusal or neglect of the owners to carry out the orders of the board. In the demolition of the 14 houses under the direction of the board no assessments against the ground have been necessary, as the old material contained in the premises paid for the cost of demolition.

Consideration has been given by the board to many insanitary frame stables which provided breeding places for flies and rats, caused by the lack of sewer connection, defective floor paving, and defective manure bins, and proper alterations and repairs were made or the structures demolished.

With the demolition of the two houses in I Street Alley NW. and the three houses in Childs Court NE., these alleys now cease to be inhabitated.

In the annual report of the board for the fiscal year 1911 recommendation was made that Hughes Court NW., square 16, be converted into a minor street, running north and south, in order to eliminate the present inclosed alley. Appropriate action has been taken by the corporation counsel to bring this matter to the attention of the court, and the necessary legal work for the conversion of this alley into a minor street is now in progress.

In a previous report the board for the condemnation of insanitary buildings recommended that Navy Place SE., square 878, between Sixth, Seventh, I, and G Streets SE., be converted into a minor street running north and south, in order to eliminate the present confined alley. Further consideration has been given to this matter, and in view of all the conditions existing it is believed that a minor street in this alley could be opened at less expense by running the same east and west, on account of the vacant ground now obtainable. It is therefore recommended that this alley be converted into a minor street running from Sixth and Seventh Streets SE.

The board has the honor to invite the attention of the commissioners to the advisability of the District government systematically condemning the interior of squares largely occupied with alley dwellings.

A beginning was made by the condemnation of what is known as Willow Tree Alley SW., and it is believed by the board that this action should be pursued further in other thickly settled portions of the city. The jury returns in this particular case show that such ground can be economically acquired and such action accomplishes the

double purpose of eliminating alley dwellings and converting the grounds to interior parks provided with appropriate equipment.

It is the thought of the board that squares that are thickly built up with alley dwellings great public benefit may accrue by the purchase of the interior of these squares by the Government and the razing of the buildings thereon and converting the ground so acquired into playgrounds with public bathing pools. This property would not be expensive to condemn, and many alley dwellings would be gotten rid of and further facilities afforded the citizens for bathing and acquiring the life-saving art of swimming.

It is unnecessary to invite attention to the enthusiastic and satisfactory results obtained by the present bathing beach. The present bathing beach is, however, in the opinion of the board, quite inadequate and is poorly located for general use, and the city should have several more bathing places conveniently situated so as to be accessible to all persons in different sections of the city.

The board therefore again recommends that Goat Alley NW., square 449, situated between Sixth, Seventh, L, and M Streets NW., be converted into an interior park with an appropriate opening on L Street NW., as indicated on plan on file in the office of the engineer commissioner, at an estimated cost of $60,000.

This is one of the most largely inhabitated alleys in the city, and 42 brick and frame structures located therein provide living quarters for 11 white and 243 colored inhabitants, making a total of 254 residents. The 19 frame and 23 brick houses are of such a character structurally as not to be subject to condemnation by the board, but are maintained by the owners on notices served from time to time to correct such minor defects as may be brought to the attention of the board. The average rental of the 42 houses is $8 per month. The Government already owns approximately 14,925 square feet in alleys in this block, and for the conversion of this alley into an interior park it would be necessary to acquire about 31,557 square feet additional with the 42 brick and frame structures located thereon.

Under the act of Congress approved March 2, 1911, Congress appropriated $78,000 for the conversion of Willow Tree Alley into an interior park. Condemnation proceedings were instituted and a jury has made its report rendering a verdict of approximately $61,000 net damages. This will leave an approximate balance of $17,000 for the work of removing the buildings in the interior portion of this square, which are to be demolished, and for the development of the ground thus acquired. For the erection of an appropriate building containing shower baths, reading rooms, gymnasium, and other necessary equipment the commissioners will submit an estimate for consideration at the coming session of Congress.

In connection with the conversion of Willow Tree Alley SW. into an interior park, it is recommended than an appropriate opening for the same be acquired, preferably on the B Street or Maryland Avenue SW. side. The estimated cost of this improvement is approximately $25,000.

Attention has been previously invited to the dilapidated and insanitary condition of a group of frame buildings situated on the river front on ground controlled by the District of Columbia, and locally known as the "fish wharf."

The condition here found is a disgrace to the city and, maintained as it is under present conditions, creates a very serious menace to the health of the whole city, and the board most emphatically recommends that prompt remedial action be taken by the corporation counsel's office to secure possession of this property and to have the present structures entirely demolished.

It is recommended that an appropriation of $3,000 be secured by the commissioners for the preparation of plans by the municipal architect for a modern market for the sale of fish, oysters, and other sea food. It is proper to note that any design determined upon for the new fish wharf would be such as to conform with such improvements along the river front as Congress may subsequently appropriate for.

Respectfully submitted.

E. M. MARKHAM,
Major, Corps of Engineers, U. S. Army,
Assistant Engineer Commissioner.

WM. C. WOODWARD, M. D.,
Health Officer, District of Columbia.

MORRIS HACKER,
Inspector of Buildings, District of Columbia.
Board for the Condemnation of Insanitary Buildings.

REPORT OF ASSISTANT ENGINEER IN CHARGE OF ROCK CREEK PARK.

SIR: I have the honor to submit herewith a report of operations and statement of expenditures in Rock Creek Park for the year ending June 30, 1912.

The amount appropriated for the care and improvement of the park for the year was $20,000. This was expended as follows:

Location.	Labor.	Material.	Total.
Completing Morrow Road	$2,084.92	$2,476.82	$4,561.74
Completing Bridge No. 217, Morrow Road	671.25	7.92	679.17
Oiling Morrow Road	170.92	271.30	442.22
Oiling Beach Drive and Ridge Road (asphaltoilene A)	635.51	594.29	1,229.80
Convenience station at Pierce Mill (not completed)			707.62
Retaining walls and new approach at east end of Bridge No. 20, Pierce Mill (not completed)			787.20
Constructing Beach Driveway north of Military Road:			
Grading	2,705.97		
Quarrying and crushing stone	743.09		
Placing and rolling stone	633.61		
Cement, pipe, etc.		25.40	4,108.07
General care of park	5,440.34	10.53	5,450.87
Feed and other supplies, miscellaneous items			1,703.29
Unexpended balance			330.02
Total			20,000.00

The Morrow Road, a short connection leading from Sixteenth Street at Kennedy Street to the Beach Drive and Military Road, was completed early in the year, and opened a new entrance into the park which is much used.

Work was then begun on the construction of an extension of the Beach Drive north of the Military Road to the northern limit of the park. A quarry was opened and a crusher and engine erected in the vicinity of the road. About two-thirds of the stone for this work will be procured in this quarry, that for the surface layer only being purchased. The grading of this extension, which is 2¼ miles long, was practically finished for about 2 miles, and about 1 mile of the road was partly macadamized.

A convenience station was built at Pierce Mill, but not quite finished. The approach at the eastern end of the bridge at Pierce Mill was changed by the construction of retaining walls, and a dangerous condition at this point was removed by widening the roadway of Beach Drive.

The policy was adopted of raising the necessary grain in the park to feed the teams used, and a considerable area was planted in corn. It is intended in the future to increase the planting as to make the purchase of feed unnecessary, to a large extent utilizing land formerly cleared and cultivated, but which had reverted to a weedy and uncared-for condition.

A house in the northern end of the park was temporarily turned over to the Associated Charities for use as an infant hospital, and was so used during the season of 1912.

In the next fiscal year it is proposed to continue and to complete the construction of Beach Drive north of the Military Road; to macademize a road across the north end of the park, and, if funds are supplied, to construct a roadway through Piney Branch parkway, giving another entrance into the park from Sixteenth Street near Spring Road.

Very respectfully,

L. R. GRABILL,
Assistant Engineer in charge of Rock Creek Park.

Lieut. Col. W. V. JUDSON,
Engineer Commissioner, District of Columbia,
Secretary Board of Control, Rock Creek Park.

REPORT OF THE SUPERINTENDENT OF THE DISTRICT BUILDING.

WASHINGTON, *September 10, 1912.*

SIR: We have the honor to report the following in connection with the maintenance of the District Building for the year ending June 30, 1912.

The last annual report of the superintendent of the District Building noted the installation of mechanical stokers for burning bituminous coal. These stokers have been in use since the latter part of May, 1911, burning New River bituminous coal, averaging about 20 per cent volatile matter. The stack has been under careful observation by this office and the smoke inspector of the district during that period, and at no time has anything approaching unlawful smoke been noted.

Notwithstanding the fact that the past winter was the longest and the most severe of any since the building has been occupied, and that the electrical load for the fiscal year 1912 was 4 per cent greater than that of 1911, there was a saving in the cost of fuel of 23 per cent.

Fuel for the District Building was purchased for the first time on the "analysis" basis; payments being made on the heating value of the coal delivered rather than mere weight of material. The accepted bid provided that the contractor should deliver, at $3.10 per ton, coal containing 14,600 British thermal units per pound of coal "as received" and 4.9 per cent ash in dry coal. A sample from each delivery was analyzed by the Bureau of Mines and payments made on the result. The highest price paid per ton was $3.1148; the lowest, $2.545; the average, $2.979 for the year. This method of purchase has proved very satisfactory.

The elevator control boards were modified with the result that the starting power has been materially reduced and an economy in operation will thereby be effected.

A direct-connected, motor-driven, low-pressure, rotary air compressor was installed during the latter part of the year, which it is believed will result in a saving over the high pressure steam-driven compressor previously used in that service.

That space known as rooms 2 and 4 has been rearranged so as to provide office facilities for the supervisor of playgrounds. Room 2 has been assigned to and occupied by that office.

The exterior of all window frames of the building were repainted; extensive repairs made to the main roof; a new condenser was installed in connection with the refrigerating plant, and numerous minor repairs and adjustments have been made to the building and its equipment.

The details of expenditures are shown in the auditor's report of the appropriation for the maintenance of the Municipal Building, District of Columbia, 1912.

Very respectfully,

E. M. MARKHAM,
Major, Corps of Engineers, U. S. Army.
MARK BROOKE,
Captain, Corps of Engineers, U. S. Army,
Jointly Superintendent of the Building.

The HONORABLE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.
(Through Lieut. Col. William V. Judson, Corps of Engineers, United States Army, Engineer Commissioner, District of Columbia.)

APPENDIX.

SPECIFICATIONS FOR PAVING STREETS WITH SHEET ASPHALT AND BITUMINOUS MACADAM.

1. *Work.*—The work to be done under this contract will consist of paving with sheet asphalt such streets, avenues, and roads in the District of Columbia, or parts thereof, or doing any portion of such work as may be ordered in writing by the Commissioners of the District of Columbia under appropriation for the fiscal year ending June 30, 1913. The estimated amount is 21,000 square yards of asphalt surface and 1,700 square yards of vitrified block gutter, 6,000 square yards of bituminous macadam on a concrete base and 5,000 square yards of bituminous macadam on a broken-stone base. These amounts are approximations only and may be considerably varied from, but they will be used in canvassing bids, and the awards will be based thereon. One award will be made to the lowest acceptable bidder for all the asphalt pavement including their vitrified block gutters and another award to the lowest acceptable bidder for all the bituminous macadam (items 3 and 4 of the proposal). The commissioners especially reserve the right to regulate the time and order of executing work ordered under this contract as may appear most advantageous to the interests of the District.

2. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the roadbed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, red lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor, and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

3. *Grading and subgrade for concrete base.*—The area over which the pavement is to he laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depths as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

6. *Concrete base.*—Upon the bed thus prepared there will be laid a 6-inch foundation of concrete as directed, made of the following materials, by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel.

Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

5. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to

extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work or while being hauled upon the work shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of $1.50 per barrel of Portland cement for each and every barrel so furnished and collect the amount due therefor from any moneys found to be due to said contractor by the District.

6. *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

7. *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

8. *Gravel.*—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions and shall run from that down to pea size, well graduated.

9. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

10. *Platforms.*—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work and kept there until used.

11. *Mixing.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring 1 barrel of cement, the platform must not be smaller than 10 feet by 12 feet, nor will a larger amount of concrete than can be made with 1 barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

12. *Setting.*—Concrete shall nor be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

13. *Binder.*—The binder course shall be composed of clean, broken stone, equal in quality to the stone for the base, and passing a 1¼-inch screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than 1½ inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be throughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will

be at least 1½ inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond, it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it, and, when ordered by the engineer, shall sprinkle it in warm weather between the hours of sunset and sunrise as often as may be deemed necessary, and in cold weather cover it with a material suitable for its protection.

14. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean, sharp-grained sand, and fine absorbent mineral dust.

15. *Asphalt.*—The asphalt shall be refined until homogenous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 17.

16. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

17. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

2. When a briquet of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box ¾ inch deep by 2½ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven, it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

18. *Sand.* The sand in use shall be free from mud, hard grained, and moderately sharp. On sifting, it should have at least 15 per cent of material that would be caught on a 40 mesh per inch screen, 25 per cent of material that will pass an 80 mesh to the inch screen, and 10 per cent at least must pass a 100 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased or diminished on streets of light traffic at the discretion of the engineer commissioner.

19. *Mineral dust.*—This shall be any fine hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

20. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportion by weight depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned; its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand, or the mixture of sand and stone dust, and the asphaltic cement, will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand in the required proportions and then mixed with the asphaltic cement at the required temperature, and in the proper proportion in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required in suitable tin boxes and cans; he shall have access to all branches of the works at any time, and shall have the right to obtain samples of all materials from the source of supply.

The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least 2½ inches by means of hot iron rakes in such manner as to give uniform and regular grade, so that, after having received its ultimate compression, it will have a net thickness of at least 1½ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by hand or steam rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam-roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than five hours for every 1,000 yards of surface. The street to be barricaded until the surface is cool. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

21. *Hauling and grading.*—(*a.*) The old material from the streets will be hauled to the nearest property yard or to such other point as the engineer commissioner may direct.

(*b.*) Lines and grades will be established by the engineer commissioner, and no work will be commenced until these are given.

(*c.*) Contractors are to be responsible for the proper preservation of all stakes, etc., set by the engineer for the determination of line or grade; should any such be disturbed through carelessness the cost of replacing same will be charged against the contractor at a fixed price of $2 for each point, to be deducted from any money found due at final settlement.

(*d.*) All material excavated of whatsoever nature is the property of the District, and will be disposed of as the engineer commissioner shall direct.

(*e.*) The filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used, it will be removed at the cost of the contractor.

(*f.*) All measurements will be made in place, and payments made thereon.

(*g.*) Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" section deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

22. *Laying vitrified block.*—Vitrified-block gutters will ordinarily be 18 inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture, composed of 4 parts of the sand specified in paragraph 6 and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving blocks, to the depth of not less than one-half inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy hammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout, of neat natural cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will in that case extend to the bottom of the crossties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards, and must be hauled to the work at his expense.

BITUMINOUS MACADAM ON CONCRETE BASE.

23. *Concrete base.*—The base is to conform in all respects to the specifications herein in relation to concrete base for sheet asphalt pavements.

24. *Paving materials.*—The paving materials shall be composed of crushed trap-rock screenings, concrete sand, and mineral dust in the following proportions: Trap-rock screenings, 2 parts; concrete sand, 1 part; and mineral dust, at least 5 per cent of the above aggregate, mixed with asphaltic cement. The various constituents of the mineral aggregate and asphalt cement shall be of the same kind and conform to District specifications for such materials for the year ending June 30, 1913, as follows:

25. *Trap rock.*—The trap rock shall be of a quality to be approved by the engineer, and shall be equal to that used by the District of Columbia for macadam roadways. The crushed stone will vary in size from 1 inch to screenings and shall be devoid of dust.

26. *Sand.*—The sand shall be hard grained and moderately sharp. On shifting it should have at least 25 per cent of material that would be caught on a 20-mesh per inch screen, and 5 per cent of material that will pass an 80 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

27. *Mineral dust.*—This shall be any fine, hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

28. *Asphalt.*—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 30.

29. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics: Free from water and foreign matter, flash point not less than 300° F., distillate at 400° for 30 hours, less than 10 per cent. The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

30. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F., it will not be softer than 350 penetration.

2. When a briquette of the bitumen having a minimum cross section of one square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box ¾ inch deep by 2½ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

31. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportions by volume depending upon their character and the traffic on the street, and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 7 to 9 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned; its use will not be permitted; and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

32. *Laying asphalt surface.*—The stone and paving cement shall be heated separately to a temperature of about 300°, and shall be thoroughly mixed while hot by machinery. The proportion of paving cement shall be sufficient to thoroughly coat each particle of the aggregate, and the entire mixture shall be subject to the approval of the engineer. The mixture will be hauled while hot to the site of the work and shall be covered until deposited on the street. The temperature at the time of dumping shall not be less than 220°. The hot mixture shall be evenly spread with hot tools upon the base to such a thickness as will make a layer 2 inches in thickness after rolling. It shall then be rolled with a steam roller weighing not less than 1 ton per foot of tread of roller, until no further compression occurs. After the rolling of the asphaltic wearing surface has been completed there shall be spread over such surface a thin coating of asphaltic cement not to exceed on an average a quarter of a gallon to the square yard, of such consistency as shall be approved, which shall be thoroughly brushed into the wearing surface so as to fill all voids and smooth out any minor unevenness of the said surface. There shall then be spread over and rolled into this flush coat a thin layer of trap screenings, so far as practicable, devoid of dust, in size from three-eighths inch down, whose use shall be to the end of securing a gritty, no-slippery surface. The finished surface shall be free from lumps or depressions and shall be true to the required cross-section.

BITUMINOUS MACADAM ON BROKEN STONE BASE.

33. A surface coat of bituminous macadam complying in all respects to the specifications above for bituminous macadam for concrete base is to be laid on a base of broken stone or gravel. The base will be furnished by the District of Columbia, in place and rolled, ready for surfacing. The price bid will include supplying, mixing, placing, and rolling the bituminous surface.

ADDITIONAL WORK.

34. The following specifications will cover incidental work which may be required of the contractor.

35. *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench in width will be 14 inches from the curb line toward the building line of the street, and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade with plumb face. Spalls of stone, hard burned brick, or other acceptable substance prepared for the purpose will be used to adjust the stone to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the stone has been properly placed and adjusted to the line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

36. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete, by the use of heavy wooden mauls. The face of the curb must be plumb and true to line, and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of blocks must be removed immediately after the curb is set.

37. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

38. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the disposition of it in the work, and no new concrete is required other than that sufficient to embed the stone at the back and adjust it to line and grade.

39. *General instructions.*—All curb will be furnished to the contractor at the District property yard, and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

40. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices to be paid for this work will be as stated below:

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.

(3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

(4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.

(5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.

(6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.

(7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.

(8) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.

(9) Removing old rubble, cobble, flagging stone and brick, asphalt block, vitrified block or brick, etc., including hauling not to exceed 2 miles, 15 cents per square yard.

(10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work including haul, 12 cents per square yard.

(14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.

(15) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, $1 per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, $1.85 per cubic yard.

(18) Removing old concrete base and hauling not to exceed 1,000 feet, $1.50 per cubic yard.

(19) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.

(20) Laying or relaying vitrified or block on old concrete base, 60 cents per square yard.

(21) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.

(22) Cleaning old vitrified brick or block relaying, 25 cents per square yard.

(23) Laying and relaying granite block, 75 cents per square yard.

(24) Relaying cobble and rubble, 30 cents per square yard.

(25) Repairing cement walks, $1.50 cents per square yard.

(26) Repairing brick walks, 25 cents per square yard.

(27) Laying asphaltic or broken-stone base in place, $3 per cubic yard.

(28) Laying Portland cement concrete base in place, $5 per cubic yard.

(29) Adjusting manhole tops and basin covers to grade, $1.50 cents each.

(30) Adjusting water-valve casings to grade, $3 each.

(31) Adjusting electric-light or telephone manhole tops to grade, as follows:

(*a*) Size, 14 by 18 inches, $1 each.

(*b*) Size, 36 by 36 inches, $1.50 cents each.

(*c*) Size, 6 by 6 feet, $4 each.

(32) Laying asphalt top, 57 cents per cubic foot.

(33) Laying asphaltic binder, 43 cents per cubic foot.

41. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

42. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the date of completion of each street hereunder. Ten per cent of the cost of the work as specified in paragraph 11

of the general stipulations will be retained and disposed of as otherwise provided for herein.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsovever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality and in accordance with these specifications. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance the work is to be inspected, and all imperfections, depressions and unevenness of surface, alignment and grade of curbs, sidewalks, etc., must be corrected where and to such extent as the engineer commissioner shall direct, upon which the engineer commissioner will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer.

43. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified, and insuring that the terms of the contract shall be strictly and faithfully performed. In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

44. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

45. Certificates of indebtedness against street railway companies will be given to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said companies in accordance with existing laws.

46. Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

47. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR LAYING ASPHALT-BLOCK PAVEMENTS.

1. *Work.*—The work to be done under this contract will consist of paving with asphalt block on a 6-inch concrete base, such streets, avenues, and roads in the District of Columbia, or parts thereof, or doing any portion of such work, as may be ordered in writing by the Commissioners of the District of Columbia, under appropraitions for the fiscal year ending June 30, 1913. The estimated amount is 6,500 square yards.

2. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the roadbed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements and parkings, both public and private, to satisfactory condition.

3. *Asphalt blocks.*—(*a*) The size of the blocks will be 2 by 5 by 12 inches, and a variation of one-fourth of an inch from these dimensions will be sufficient ground for rejecting any block.

(*b*) All bids must be accompanied by a specimen block of the size and quality described in these specifications, labeled with the name of the bidder and locality of the factory. Bids not accompanied by specimen blocks will not be accepted. The

blocks will be tested for specific gravity, all blocks furnished must be equal in quality to the sample, as determined by the engineer commissioner.

(c) The blocks will be composed of asphalt, petroleum oil, and asphalt cement.

4. *Asphalt.*—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 50 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 25 parts of the flux to produce the asphalt cement described in paragraph 6.

5. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

6. *Asphalt cement.*—The asphalt cement must be practically free from water and shall not at any time reach a temperature high enough to injure it.

If an asphalt is accepted that is readily affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid.

The asphalt cement must comply with the following requirements and must in any case be subject to the approval of the engineer commissioner.

(1) For the purpose of testing the asphalt cement having a penetration of 20° at 77° F. on the Dow penetration machine with a No. 2 needle, 100 grams, 5 seconds, its composition shall be so regulated by the addition, if necessary, of standard fine absorbent mineral dust, that it will contain 50 per cent of bitumen soluble in carbon bisulphide. This cement shall be so tough at 32° F. that a prism 1 centimeter square by 8 centimeters long between supports will not break under impact at center with less than 15 centimenters drop of a 25 gram weight striking a vertical plunger having a horizontal face of one centimeter by one millimeter resting on the asphalt prism.

(2) Degree of penetration of the asphalt cement to be fixed by the engineer commissioner.

(3) When the cement is heated in an open tin box ¾ inch deep by 2½ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

7. *Mineral dust.*—This shall be any fine hydraulic cement or lime stone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

8. *Crushed stone.*—The crushed stone in use shall be from any tough, hard rock, and shall not contain any appreciable amount of soft ingredients, such as mica, soft sandstone, or shale. On sifting not more than 3 per cent shall be retained on a 3 mesh per inch screen, at least 40 per cent must be retained on 20 mesh per inch screen, and at least 12 per cent must pass a 100 mesh per inch screen. If the stone does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

9. *Asphalt-block mixture.*—The materials complying with the above specifications shall be mixed in proportions by weight, depending upon their character, which will be determined by the engineer commissioner, but in any mixture the percentage of bitumen soluble in carbon bisulphide shall not exceed the limits, 6 to 9 per cent.

If the proportions of the mixture are varied in any manner from those prescribed, the blocks will not be accepted.

The stone and dust and the asphaltic cement must be mixed while hot, and the mixture must be compressed into blocks by methods meeting with the approval of the engineer commissioner.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required, in suitable tin boxes and cans, and he shall have access to all branches of the works at all times.

Blocks are to be manufactured with a total minimum compression of not less than 360,000 pounds per block, press pressure.

10. *Grading and subgrade.*—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling, with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

13. *Concrete base.*—The space over which the pavement is laid will be excavated to the proper depth below the surface of the finished pavement, and trimmed, filled, and rolled as described for gravel base. Upon this bed will be laid a base of concrete 6 inches thick, when compacted, and made of the following materials by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel. Broken stone, run of the crusher, may be substituted for part or all of the gravel, at the option of the contractor.

14. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia, and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements, before it can be used on the streets, and if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of $1.50 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefor from any moneys found to be due to said contractor by the District.

15. *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

16. *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

17. *Gravel.*—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions, and shall run from that down to pea size, well graduated.

18. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

19. *Platforms.*—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work, and kept there until used.

20. *Mixing.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned over and

mixed with shovels by skilled workmen not less than 6 times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels not less than four times and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring one barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with one barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

21. *Setting.*—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels so as to give the requisite thickness after being tamped and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

22. *Method of laying blocks on concrete base.*—The 2-inch blocks are to be laid on this concrete base in a paving bed of mortar, made of 1 part of Portland cement and 4 parts sand, at least one-half inch thick, and a much thicker as may be necessary, due to inequalities in surface of concrete base so that the blocks when tamped in place will be securely embedded in the mortar and wholly supported by it, and will present a uniform surface with close joints and proper grade and crown. The pavement will then be thoroughly grouted with a thin, easily flowing grout of 1 part neat Portland cement and 1 part fine sand.

23. *Hauling and grading*—

(*a*) The old material from the streets will be hauled to the nearest property yard or to such other point as the engineer commissioner may direct.

(*b*) Lines and grades will be established by the engineer commissioner, and no work will be commenced until these are given.

(*c*) Contractors are to be responsible for the proper preservation of all stakes, etc., set by the engineer for the determination of line or grade; should any such be disturbed through carelessness the cost of replacing same will be charged against the contractor at a fixed price of $2 for each point, to be deducted from the money found due at final settlement.

(*d*) All material excavated, of whatsoever nature, is the property of the District and will be disposed of as the engineer commissioner shall direct.

(*e*) The filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used it will be removed at the cost of the contractor.

(*f*) All measurements will be made in place, and payments made thereon.

(*g*) Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

24. *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line having a depth of 24 inches below the top of the curb when set and 20 inches wide will be excavated to receive the curb and its gravel bed. The dimensions of the trench, in width, will be 14 inches from the curb line toward the building line of the street and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade, with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance prepared for the purpose will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

25. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line having a depth of 15 inches below the top of the curb when set and 18 inches wide will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade, the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-brick gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

26. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also, the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

27. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to imbed the stone at the back and adjust it to line and grade.

28. *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work. Any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

29. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below.

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.

(3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

(4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.

(5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.

(6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.

(7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.

(8) Dressing, jointing, and cutting curb, etc. (stonecutters' time) including setting-up labor, 65 cents per hour.

(9) Removing old rubble, cobble, flagging stone and brick, asphalt block, vitrified block or brick, etc., including hauling not to exceed 2 miles, 15 cents per square yard.

(10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.

(14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.

(15) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, $1 per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, $1.85 per cubic yard.

(18) Removing old concrete base and hauling not to exceed 1,000 feet, $1.50 per cubic yard.

(19) Hauling excavated material, per 100 feet over first 1,000 feet, 1 cent per cubic yard.

(20) Laying new or old vitrified brick or block on new 6-inch concrete base, $1.30 per square yard.

(21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(22) Laying and relaying vitrified brick or block on gravel base, 40 cents per square yard.

(23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(24) Laying and relaying granite block, 75 cents per square yard.

(25) Relaying cobble and rubble, 30 cents per square yard.

(26) Repairing cement walks, $1.50 per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, $3 per cubic yard.

(29) Paying Portland cement concrete base in place, $5 per cubic yard.

(30) Adjusting man-hole tops and basin-covers to grade, $1.50 each.

(31) Adjusting water-valve casings to grade, $3 each.

(32) Adjusting electric-light or telephone man-hole tops to grade, as follows:

(a) Size, 14 by 18 inches, $1 each.

(b) Size, 36 by 36 inches, $1.50 each.

(c) Size, 6 by 6 feet, $4 each.

30. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

31. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the same as the date of completion of each street hereunder. Ten percentum of the cost of this work will be retained as prescribed in paragraph 11 of the general stipulations and disposed of as provided for by law.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct. upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer.

32. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified, and insuring that the terms of the contract shall be strictly and faithfully performed. In the event of the contractor failing to make such necessary repairs after notice to do so the com-

missioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

33. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

34. Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is done.

35. Certificates of indebtedness against street railway companies will be given to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said companies in accordance with existing laws.

36. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR RESURFACING AND REPAIRING ASPHALT AND COAL-TAR PAVEMENTS.

1. *Work.*—The work to be done under this proposal and contract includes the renewal or resurfacing of such asphalt and coal-tar pavements as may be ordered from time to time by the engineer commissioner or his assistants, and the renewal of the surface of cuts made for tapping sewers and pipes, or for other purposes, and generally all patching and miscellaneous work necessary to keep the above-mentioned pavements in good condition for travel, including the repairs of sidewalks and other pavements disturbed in doing the above work or changed to conform to new grades, if so ordered.

2. *Amount of work.*—The amount of work is dependent upon the annual appropriation for "Repair to streets," which was $400,000 for the fiscal year ending June 30, 1911, and is $425,000 for the fiscal year ending June 30, 1912. For the purpose of canvassing bids the following approximate estimate of the amount of work to be done during each fiscal year of this contract will be used (material for street railway repairs not estimated, and will not be considered in the canvass of bids):

Standard asphalt pavement on 6-inch concrete base	square yards	70,000
Standard asphalt surface (2½-inches before compression)	do	35,000
Standard asphalt surface, cubic-foot measurement (heater method), cubic feet		40,000
Standard asphalt surface, cubic-foot measurement (repairs and miscellaneous work, cuts, etc.)	cubic feet	125,000
Asphalt binder, cubic-foot measurement, in connection with resurfacing, cubic feet		60,000
Asphalt binder, cubic-foot measurement, for repairs and miscellaneous work, cuts, etc	cubic feet	95,000

3. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the road-bed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all materials (except as specified) and all tools and implements, labor and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

4. *Old material.*—The amount of old material to be cut and removed each day shall be decided by the engineer commissioner or his agents. Should the contractor remove more than ordered, he must replace it with new material without cost to the District. No payment will be made for any coal-tar or asphalt surface removed in making repairs, and the material thus removed will become the property of the con-

tractor, to be disposed of by him. Any coal-tar or asphalt surface and binder removed from concrete base in resurfacing work will be paid for at the price named in paragraph 41 of the specifications, and such material will become the property of the contractor and be disposed of by him unless the engineer commissioner should elect to retain title to any of this material, in which event the contractor will for the price named deliver the same to a distance not to exceed 2 miles from the site of the work. Where the old pavement, base and surface, is removed for the purpose of laying a new pavement the material will be the property of the District and the work will be paid for at the prices named in paragraph 41 of the specifications. Granite blocks, cobble, old curb, etc., must be removed to the nearest property yard or to such place within the section of the city being repaired as the engineer commissioner may direct.

ASPHALT PAVEMENTS.

All asphalt work will be done in accordance with the following specifications:

5. *Grading and subgrade.*—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling, with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extr allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

6. *Concrete base.*—Upon the bed thus prepared there will be laid a 6-inch foundation of concrete s directed, made of the following materials by volume: One part Portland cement, 3 parts sand, 7 parts gravel.

Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

7. *Cement.*—The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia. No brand of cement will be accepted for use which has not established itself as a high-grade Portland cement and given satisfaction for three or more years in use under climatic or other conditions of exposure of at least equal severity as those of the work proposed. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time, not exceeding 28 days, as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 10 days after notifying the inspector of asphalt and cements, before it can be used on the streets, and if deemed advisable by the engineer commissioner, 28 days. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stocks on hand at its warehouse and charge said contractor with the cost of same at the rate of $2 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefor from any moneys found to be due to said contractor by the District.

8. *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

9. *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

10. *Gravel.*—Gravel shall be clean washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions and shall run from that down to pea size, well graduated.

11. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

12. *Platforms.*—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work and kept there until used.

13. *Mixing.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor, the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring 1 barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with 1 barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery, the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

14. *Setting.*—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels, so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reason for removal and replacement of the base. Hauling over base less than 3 days old must not be allowed unless planks are laid.

15. *Binder.*—The binder course shall be composed of clean broken stone, equal in quality to the stone for the base, and passing a 1¼-inch screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than 1½ inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will be at least 1½ inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond, it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it and, when ordered by the engineer, shall sprinkle it in warm weather between the hours of sunset and sunrise as often as may be deemed necessary and in cold weather cover it with a material suitable for its protection.

16. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean sharp-grained sand, and fine absorbent mineral dust.

17. *Asphalt.*—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in corbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 19.

18. *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics:

Free from water and foreign matter.

Flash point, not less than 300° F.

Distillate at 400° for 30 hours, less than 10 per cent.

The flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and packed entirely in asbestos. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents fulfilling the above tests, and approved by the engineer commissioner, may be used in place of petroleum oil.

19. *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner, no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving, under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely, in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

1. It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

2. When a briquet of the pure bitumen, having a minimum cross section of 1 square centimeter, is tested for ductility at 77° F., the bitumen must stretch to a distance of 15 centimeters before breaking.

3. When the bitumen is heated in an open tin box, ¾ inch deep by 2½ inches in diameter, at a temperature of 300° F. for 18 hours in a hot-air oven, it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles, so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

20. *Sand.*—The sand in use shall be free from mud, hard grained, and moderately sharp. On sifting it should have at least 15 per cent of material that would be caught on a 40 mesh per inch screen, 25 per cent of material that will pass an 80 mesh to the inch screen, and 10 per cent at least must pass a 100 mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased or diminished on streets of light traffic at the discretion of the engineer commissioner.

21. *Mineral dust.*—This shall be any fine hydraulic cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

22. *Asphalt paving mixture.*—The materials complying with the above specifications shall be mixed in proportion by weight, depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified the mixture will be condemned; its use will not be permitted; and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand, or the mixture of sand and stone dust, and the asphaltic cement will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand, in the required proportions, and then mixed with the asphaltic cement, at the required temperature and in the proper proportion, in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required, in suitable tin boxes

and cans; he shall have access to all branches of the works at any time and shall have the right to obtain samples of all materials from the source of supply.

The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least 2½ inches by means of hot iron rakes, in such manner as to give uniform and regular grade, so that, after having received its ultimate compression, it will have a net thickness of at least 1½ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by hand or steam rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than 5 hours for every 1,000 yards of surface. The street to be barricaded until the surface is cool. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

23. *Asphaltic base.*—Asphaltic base will be composed of clean broken stone, free from spalls, that will pass through a 2-inch ring, well rammed, and rolled with a steam roller weighing not less than 5 tons. The rolling will be continued until the stone ceases to creep before the roller and until it is evident that the final compression has been reached. It will then be thoroughly coated with asphaltic paving cement of approved quality, as directed.

RESURFACING OVER ASPHALT AND COAL-TAR PAVEMENTS.

24. The above specifications shall also apply, as far as practicable, to all work of resurfacing. Where the binder coat can not be made of uniform thickness, it will be paid for by the cubic foot. The engineer commissioner will decide which method of payment will be adopted in each case.

RESURFACING BY THE HEATER METHOD.

25. The engineer commissioner may order certain streets resurfaced by what is known as the Lutz asphalt heater method, or a similar device satisfactory to the engineer commissioner, as follows:

The old surface of the street shall be heated and softened by means of this heater, to the satisfaction of the engineer commissioner or his authorized agent, and so much of the old asphalt topping so softened shall be removed as may be directed. Immediately upon the surface exposed by the removal of the aforesaid old top there shall be deposited new asphaltic top material and immediately the same shall be spread by means of hot shovels and rakes to such an amount and of such thickness as will not be less than 1½ inches before compression, as may be directed by the district inspector assigned to the work, the intention being to cover the new surface while still hot with hot new material. This new material so spread shall without delay be rolled with hand or steam rollers and finally finished, by means of a steam roller of not less than 5 tons weight, to a firm condition as to compression and to a regular section in a manner entirely similar to that of new construction. It is the intent of this specification that new work shall be joined to old in all cases with a hot joint, and the contractor is expected to make every reasonable effort to secure this result. Successive heatings shall be made when necessary, as above described, until the entire street, or such portions thereof as indicated, has been covered. This class of resurfacing will not be considered new work, and therefore no retent will be held on the amount paid for this class of work. The same will be paid for by the cubic feet of material furnished, and the price bid on material for this class of work will include all incidental work in connection therewith, such as cutting out old material where necessary and removing same, also removing old heated material, cleaning up, etc., as in the case of ordinary repairs. In the event that asphaltic binder is required in connection with this work it will be paid for by the cubic foot at the price named in Item 4 of the contract prices herein for binder furnished in connection with resurfacing work.

ORDINARY REPAIRS.

26. The work to be done under this head includes the repairing of all asphalt and coal-tar pavements where defective, due to wear or accident; the repairs of all cuts, such as those made for tapping sewers, water pipes, etc.; and generally all patching and miscellaneous work necessary to keep the pavements in good condition for travel during the contract period. The pavement must be repaired with materials as described above.

27. The repairs shall be made at such times and places and in such manner as may be directed, and when deemed necessary on certain streets, between the hours of 8 p. m. and 8 a. m. All old material shall be cut out and removed at the contractor's expense, and in the case of undercuts any overhanging portion shall be removed.

28. Except in special cases, the base of the pavement over any cuts will be laid by the District, and the surface only by the contractor. The engineer commissioner may, however, call upon the contractor to lay the base wherever he may deem it advisable.

29. The holes cut out shall be cleaned and the edges painted with hot paving cement of such quality as may be acceptable to the engineer commissioner.

30. Barricades of a suitable form to prevent traffic over recently laid work shall be provided and kept in place until the surface has hardened sufficiently to withstand pressure. These barricades and their use must be subject to the approval of the engineer commissioner.

31. Work in repairing over plumber, electric light, and similar cuts will be done immediately on receipt of written order from the engineer commissioner.

32. Any work of repairs to pavement for which street railway companies are responsible, and which may be ordered under this contract by the proper authority, shall conform to these specifications and be paid for at the prices named in items 7 and 8 of the contract prices herein. In case any railway company shall fail or refuse to pay the sum due from said company in respect of work done by or under the orders of the proper officials of the District of Columbia, certificate of indebtedness against said railway company will be issued to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said company in accordance with existing laws.

33. *Measurement.*—Asphaltic top and asphaltic binder specified herein to be paid for by the cubic foot shall be measured on the basis of the box or measure used for measuring at the plant; the sand, in the case of top mixture; and the stone in the case of binder mixture. In the case of asphaltic top mixture the actual net contents of the box as filled with sand will determine the amount of resultant top mixture to be paid for, and in the case of binder stone 92 per cent of the actual net contents of the box as filled with binder stone will determine the amount of resultant binder to be paid for, and payments on these bases will be made. This rule of measurement shall also apply to work done under the heater method.

ADDITIONAL WORK.

34. The following specifications will cover incidental work which may be required of the contractor in connection with the work of renewal, resurfacing, and repairs:

35. *Laying vitrified block.*—Vitrified-block gutters will ordinarily be 18 inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture composed of 4 parts of the sand specified in paragraph 8, and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving blocks, to the depth of not less than one-half inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy hammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout of neat Portland cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will in that case extend to the bottom of the cross-ties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards, and must be hauled to the work at his expense.

36. *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench in width will be 14 inches from the

curb line toward the building line of the street and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance prepared for the purpose will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it, without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

37. *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet-asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

38. *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

39. *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to embed the stone and back and adjust it to line and grade.

40. *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of, or damaged or broken through careless or unskilled handling, will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

41. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.

(3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

(4) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
(5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.
(6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
(7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
(8) Dressing, jointing, and cutting curb, etc. (stonecutter's time) including setting-up labor, 65 cents per hour.
(9) Removing old rubble, cobble, flagging stone, and brick, asphalt block, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.
(10) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
(12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.
(14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
(15) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.
(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, $1 per cubic yard.
(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, $1.85 per cubic yard.
(18) Removing old concrete base and hauling not to exceed 1,000 feet, $1.50 per cubic yard.
(19) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.
(20) Laying new or old vitrified brick or block on new 6-inch concrete base, $1.30 per square yard.
(21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.
(22) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.
(23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.
(24) Laying and relaying granite block, 75 cents per square yard.
(25) Relaying cobble and rubble, 30 cents per square yard.
(26) Repairing cement walks, $1.50 per square yard.
(27) Repairing brick walks, 25 cents per square yard.
(28) Laying asphaltic or broken stone base in place, $3 per cubic yard.
(29) Laying Portland cement concrete base in place, $5 per cubic yard.
(30) Adjusting manhole tops and basin covers to grade, $1.50 cents each.
(31) Adjusting water-valve casings to grade, $3 each.
(32) Adjusting electric-light or telephone manhole tops to grade, as follows:
(a) Size 14 by 18 inches, $1 each.
(b) Size 36 by 36 inches, $1.50 each.
(c) Size 6 by 6 feet, $4 each.

42. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

43. *Guaranty.*—All work under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the same as that of the completion of the work as indicated on the final voucher for each street. Ten per centum of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on ordinary repairs (minor repairs).

It is further expressly understood and agreed that if any of the pavements laid should for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer commissioner.

44. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified. In the event of the contractor failing to make such necessary repairs after notice to do so, the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

45. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

46. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumber's cuts or other work done by the permission of the commissioners before the work is begun.

47. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR LAYING CEMENT SIDEWALKS.

1. *Classes A and B.*—Work under class A will consist of all large work located on streets, avenues, places, etc., within the limits of the city of Washington (including Georgetown or West Washington), and all work on streets, avenues, places, etc., beyond said limits where the roadways are paved. Work under class B will consist of all large work located on streets, avenues, places, etc., outside the limits of the city of Washington, as above, where the roadways are not paved, and of all small work wherever located. For classification for purposes of payment under this contract any item of work which exceeds 100 square yards will be rated and paid for as "large work," items of 100 square yards or less being rated at "small work." The aggregate of the item will be the determining consideration, since it may consist of two or more detached pieces in the same vicinity. Any questions as to classification under this paragraph will be decided by the engineer commissioner.

2. *Grading.*—The contractor is to make such cutting and filling as may be necessary to bring the foundation, when compacted, to the level of 5 inches below the surface of the finished pavement. Grading, either cut or fill, to the needed depth, not exceeding 1 foot on the average for each separate piece of work, and including the area of tree spaces, either continuous or interrupted, must be done without additional or extra charge, inclusive of removal and haul to designated property yard of all sidewalk material between the curb line and the back of the new work, whether the old sidewalk is wholly replaced by the new cement part or not.

Grading in excess of the 1 foot average depth and removal of old cement or asphalt sidewalk will be paid for as additional work at prices stated herein.

Material for filling must be suitable for the purpose, and satisfactory to the engineer, and must be placed in layers and compacted for making good foundation, as required by him.

In case of excavation, any unsuitable or objectionable material in the bed, as determined by the engineer, is to be wholly removed and the spaces filled with broken stone or other suitable material satisfactory to him.

The contractor is to trim the bed so as to make it parallel to the surface of the finished pavement and thoroughly compact the bed by rolling or ramming without extra pay.

On the bed thus prepared will be laid, after compacting, 4 inches of cement concrete and 1 inch of cement mortar covered by a thin, dry surface coat all made of the materials and in the manner hereafter described.

3. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The cement used shall conform to the current specifications for supplying cement of its kind to the engineer department of the District of Columbia, and shall be subjected to such tests as are prescribed by Circular No. 33 of the Bureau of Standards, United States Government, specifications for Portland cements. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly

protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner.

4. *Sand.*—The sand used shall be clean and sharp, from fine to coarse, free from sewage, mud, clay, mica, paper, leaves, chips, and other foreign matter, but may show when shaken with water and after subsidence not more than 3 per cent by volume of silt or loam. Sand used for surface layer must be screened on line of work; screen to be used for this purpose to be designated by the engineer. Sand stored at the work shall, when required, be dumped on boards or other suitable platform and kept as clean as when delivered.

5. *Gravel.*—The gravel shall be from small to medium size and as good in quality as the best Potomac River washed gravel. The gravel shall be free from dust, dirt, chips, leaves, and other foreign or objectionable matter, and when required shall be dumped on boards and cared for as provided for sand in the preceding paragraph.

6. *Mortar and concrete.*—The mortar shall be composed of the cement and sand in the proportion of 1 to 2, by volume, thoroughly mixed dry; a sufficient quantity of water will be added afterwards by fine sprinkling to form, upon remixing, a stiff plastic paste. The proportions are intended to secure a mortar in which every particle of sand is enveloped by cement and all voids in the gravel filled with mortar, and this result must be obtained to the satisfaction of the engineer. If the mixing be by hand, it shall be done on a water-tight platform with tight raised edges, and the cement spread first. No batch shall contain more than 1 barrel of cement.

The mixing shall be done by the use of shovels, hoes, and rakes until a thoroughly uniform mortar of proper consistency as above described is secured.

7. *Concrete.*—To the mortar, made as above directed, shall be added 5 parts by volume of the specified gravel which shall have been thoroughly drenched with water just before it is added to the mortar. The drenching shall not be done in the barrow, nor otherwise to permit the addition of free water to the mortar. Each batch of concrete shall be thoroughly mixed until each piece of gravel is wholly coated with mortar and in a manner satisfactory to the engineer. If the mixing be by hand, it shall be done on a water-tight platform, with tight raised edges, and in the mixing the gravel shall be first spread over the mortar. The concrete immediately after mixing will be spread upon the foundation so that the mortar shall remain evenly incorporated with the gravel, and then thoroughly compacted by ramming. The slab or flag divisions are then to be marked off to the size and markings cut 3 inches deep. The space made by the cutting tool shall be immediately filled with dry sand and well rammed. Should the contractor so desire, he will be permitted to substitute broken stone for the gravel used in concrete. Such stone should be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter and may be the run of the crusher, containing not over 1 per cent of material passing a No. 70 sieve. It shall be free from foreign substances, as provided for gravel.

8. *Mortar and surface.*—Mortar for the surface layer shall be made of the specified cement and sand, mixed in the manner as for mortar for concrete, but in the proportion of 2 to 3, by volume. The mortar shall be spread while fresh upon the concrete base while the latter is still soft and adhesive and before it shall have reached its first set, in such quantity that after thorough manipulation it shall be 1 inch in thickness. It is then to be leveled off and beaten with wooden battens, so as to break any air cells and make the surfacing perfectly solid and at the true grade. No pavement marked by sand which has been spread over it for protection will be accepted.

9. *Dry coat.*—A coating of dry cement and fine sand in equal proportions, by volume, and such part and kind of coloring matter as the engineer may direct, thoroughly mixed, is then to be floated into the layer; and by a skillful use of tools the surface is to be made smooth. The joints of the blocks will then be made to a depth of one-half inch immediately over the joints in the concrete base and the blocks brought to a true line and grade and finished without marginal line with trowels to the satisfaction of the engineer. The trowel finish above described will be the rule of the work, but in such cases as may require it for the sake of uniformity, with adjacent pavements or other sufficient reasons the use of marginal lines and a rolled finish may be required. The decision as to the finish to be used will be made by the engineer.

Any lack of compaction between the concrete and mortar layers shall be sufficient reason for requiring entire removal and the substitution of new and satisfactory work.

10. *Protection of work.*—The pavement is to be kept moist, protected against the weather, and guarded against foot travel until it has set. Care shall be taken at all times not to interfere with business or travel more than is absolutely necessary for faithful execution of the work. Free ingress and egress from the street to entrances to premises fronting on the sidewalk shall be provided for at all times; and during the

time that travel is closed the contractor shall provide a temporary walk and keep it in good condition, safe for pedestrians and easy of access from adjoining walks or roadways. The contractor will not be allowed to obstruct private driveways or approaches, or to dig up or occupy the streets by material more than is absolutely necessary for the prosecution of the work. Special care will be taken to inconvenience the public as little as possible. The contractor will be held responsible for all injury done to the work in any way until it has been accepted and measured by the engineer.

11. *Driveways.*—Driveways shall be laid the same as sidewalks, except that the surface shall be divided into small squares, as in K Street NW., near Connecticut Avenue. The plan of driveways shall be as directed by the engineer.

12. *Tree spaces.*—Tree spaces will be left as directed. These spaces and also other edges of the work not abutting against curb, poles, or straight lines of parking, terrace, or coping, will be outlined by planed boards of sound pine, 5 inches deep, set on edge to true line and with top edge even with the pavement surface.

The edges of the new pavement not joining a curb or coping are to be clearly cut down on a true line 1 inch below the finished surface. The edges adjacent to interrupted tree spaces are to be plaster finished. The area of the tree space, either continuous or interrupted, is to be filled with earth up to the level of the pavement.

13. *Plumbing.*—All preliminary plumbing work will be done by the District. The contractor will be held responsible for all plumbing appurtenances within the limits of the finished sidewalk being at its grade and for any damage or obstruction thereto due to his operation.

14. *Cleaning work.*—Before acceptance of the work it will be cleaned and all débris and unused material removed. No crumbling or uneven edges of the sidewalk will be allowed to remain. Pine strips at edges of concrete will not be removed before 48 hours after the pavement is laid.

15. *Inspection of work.*—The engineer will appoint an inspector to see that each piece of the work, including curb work, is graded and laid according to specifications and directions. The District will not pay for any work done during the absence of the inspector.

16. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile or fraction thereof.

(3) Hauling from District property yard and setting 6 by 20 inch curb, Class A, 25 cents per linear foot.

(4) Hauling from District property yard and setting 6 by 20 inch curb, Class B, 28 cents per linear foot.

(5) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.

(6) Hauling from District property yard and setting 8 by 8 inch curb, class A, 35 cents per linear foot.

(7) Hauling from District property yard and setting 8 by 8 inch curb, class B, 38 cents per linear foot.

(8) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.

(9) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.

(10) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.

(11) Removing old rubble, cobble, agging stone and brick, asphalt block, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.

(12) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(14) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.

(15) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base and hauling not to exceed 1,000 feet, $1 per cubic yard.

(18) Removing old asphalt and cement sidewalk pavement and hauling same not to exceed 1,000 feet, $1 per cubic yard.

(19) Removing old concrete base and hauling not to exceed 1,000 feet, $1.50 per cubic yard.

(20) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.

(21) Laying new or old vitrified brick or block on new 6-inch concrete base, $1.30 per square yard.

(22) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(23) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.

(24) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(25) Laying and relaying granite block, 75 cents per square yard.

(26) Relaying cobble and rubble, 30 cents per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, $3 per cubic yard.

(29) Laying Portland cement concrete base in place, $5 per cubic yard.

(30) Adjusting manhole tops and basin covers to grade, $1.50 each.

(31) Adjusting water-valve casings to grade, $3 each.

(32) Adjusting electric-light or telephone manhole tops to grade as follows:

(*a*) Size 14 by 18 inches, $1 each.

(*b*) Size 36 by 36 inches, $1.50 each.

(*c*) Size 6 by 6 feet, $4 each.

(*d*) Size 6 by 6 feet manholes, with 36 by 36 inch covers set on I beams in concrete, $7 each.

The work of repairing cuts in cement walks, which has in recent years been done under these specifications, will be otherwise arranged for and will not be done by this contractor.

The repaving of all roadway pavements necessarily disturbed in setting or resetting curb will be done by the District without cost to the contractor.

The setting and resetting of the curb shall be done according to current District of Columbia specifications for such work.

The old curb may be removed and reset to grade and line, or the old curb may be straightened and leveled without removing it from place, as required by the engineer.

17. Existing brick walks abutting the ends of new cement walks are to be relaid, if necessary, without cost to the District, in such manner as to make them conform to the grade, etc., of the new walks in a manner satisfactory to the engineer.

18. *Amount of work.*—The work to be done under this contract consists in laying cement sidewalks in such places and in such order as may be directed by the commissioners under appropriations for the fiscal year ending June 30, 1913. The amount of work to be done under this contract can not be stated with any precision, but as an indication of what is anticipated the amount of the contractor's bond will be determined on the basis of 70,000 square yards. No guarantee is given that the quantity here stated will be equaled or may not be exceeded. The bids will be classified and award of contract based on 50,000 square yards of class A, and 20,000 square yards of class B.

19. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer arising out of any modification of these specifications that may appear necessary, and for this he will be paid at current rates for work of similar character; or if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent, the contractor shall have no claim for compensation for extra work unless the same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

20. *Guaranty.*—All work done under this contract will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from the date of its acceptance by the commissioners. This date shall be the same as that of the final voucher in which the work is an item. Ten per cent of the cost as specified under paragraph 11 of the general stipulations will be retained and disposed of as provided for by law.

On expiration of guaranty for maintenance, the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force.

21. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purposes provided by law and for the purpose of maintaining the work in repair and making good any defects discovered during the period specified.

In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require the contractor and his

sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

22. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR TRUNK SEWERS.

2. *Bids.*—The contractor shall, for the price or prices bid, do all the work prescribed in these specifications; make the requisite excavations for building the sewer and the appertaining structures and connections; shall do all ditching, diking, pumping, bailing, and draining, all sheeting, bracing, and shoring; shall make all provisions necessary to maintain and protect adjacent buildings, fences, trees, gas pipes, water courses, conduits, culverts, sewers, railways, electric lines, and other structures, and shall repair all damages to the same which may result from his operations; shall provide all bridges, fences, or other means of maintaining and protecting travel on intercepted streets, roads, and railroads, and on streets or roads in which the trenches are excavated, after giving due notice to parties affected thereby; shall maintain the same in good and safe condition so long as may be necessary, and shall then remove such temporary expedients and restore such ways to their proper condition; shall provide watchmen, red lights, fences, and all other precautionary measures necessary to the protection of persons and property; shall provide all necessary centers, molds, and forms; shall construct all foundations, all brick, concrete, stone, and timber work; shall set in place all ironwork, and refill all trenches; shall furnish all materials (except those specially mentioned in paragraph 13), and all tools, implements, labor, and transportation required to build and put the sewer in complete working order; and shall do each and all to the satisfaction of the engineer.

The prices bid are to include the cost of the removal of and delay or damages occasioned by trees, roots, timber, or masonry structures, or other obstacles (whether shown on the plans or not) except rock.

For lumber in trench no payment shall be allowed, unless the same shall be specifically directed by the engineer prior to the refilling of the trench. The contractor ordinarily will use his judgment about leaving bracing lumber in place, but shall be, in all cases, responsible for any injury which may result to the sewer or to adjacent pavements, structures, water, gas, or other conduits by the removal of bracing, sheeting, or shoring.

3. *Drawings.*—The drawings which illustrate the work to be performed and which show the location, shapes, dimensions, and materials of the sewer to be constructed are on file in the engineer department. All work executed under this contract must conform with these drawings.

Should the position of pipes and other underground objects be found to differ from that indicated on the drawings, or if it shall be found necessary to modify the lines, grades, or positions, the contractor shall have no claim for extra compensation on that account.

4. *Order of work.*—The work shall be prosecuted in such order as the engineer shall direct. He shall determine whether the conditions are favorable for working, and may suspend the work or any portion of it whenever, in his opinion, the conditions are such as will not insure first-class construction.

5. *Street occupancy and traffic.*—The operations of the sewer contractor must be so conducted that traffic upon steam and street railways and ordinary street traffic may be maintained. All material excavated must be removed from the street or deposited as back filling upon completed work.

6. *Pavements.*—All pavements disturbed in doing sewer work for the width of the trenches, as defined in section 8 of these specifications, will be relaid by the commissioners. The contractor shall, without cost to the District, haul all cobble, rubble, bricks, blocks, and tiles taken up by him to a property yard to be designated by the engineer and take receipt therefor. Macadam, hydraulic base, and sheet pavement material removed shall be piled in suitable places along the line of the work so as not to cause unnecessary obstruction of any kind, and during the progress of the work shall be guarded by the contractor against misappropriation. Whenever so ordered by the engineer the contractor shall haul this material to a property yard to be designated by the engineer. No paving material of any kind removed in making excavation shall be used or appropriated by the contractor without written permission from the engineer.

If any pavement be injured by the contractor outside the limits prescribed by the trenches, the cost of restoring such excess shall be charged against him and deducted from any amount found due him. He will maintain the surface over the line of the trench up to the street grade, with the best material obtainable from the excavation, until such time as the pavement is relaid. The cost of subsequent repairs of all pavements relaid over or adjacent to sewer trenches on account of sewer work, or of any work made necessary, within the period of one year, for which the sewer and their appurtenances are guaranteed, by settlement of the back filling of the trenches will be charged against the 10 per centum retained and invested as provided in paragraph 9 of the instruction to bidders.

7. *Private property.*—Care shall be taken not to move, without the consent of the person owning or controlling them, any trees, fences, water, or gas pipes, sewers, drains, conduits, poles, or wires for electrical purposes, railways, or other structures, and in crossing or working near them they shall be sustained securely in place until the work is completed and shall be so treated as to render their condition as efficient and permanent as before.

In sewer construction along a right of way through public or private property the contractor shall so conduct his work as not to damage said property, and so as to interfere with its ordinary use as little as possible; he shall, upon completion of the sewer, restore the surface as nearly as possible to the condition in which he found it. No material shall be used or removed from the premises without the consent of the owner or responsible party in charge of the property.

8. *Measurements.*—Measurements of work shall be made as follows:

Length: The length of sewer paid for by length, and the length of excavation shall be the whole length of the completed sewer without deduction for the space occupied by manholes.

Width: The width of the trench at any cross-section shall be considered as equal to the greatest horizontal diameter of the sewer at that cross-section, including the walls thereof, with 9 inches added thereto.

Depth: The depth at any cross-section shall be considered as equal to the mean depth from the surface to the outside bottom of the sewer at that section.

In submitting proposals bidders will be guided by the profiles given upon the drawings. These are approximate and any variance therefrom shall not be the basis of any claim for compensation above that provided for in the contract rates.

9. *Trenches.*—The ground shall be excavated in open trenches to such width and depth as may be necessary for proper sewer construction. If, however, in the judgment of the engineer, it is deemed advisable, special permission may be given for the construction of portions of the work in tunnel, in which case excavation will be allowed as if construction were in open trench. But at any time during such construction the engineer may direct the excavation to be made in open trench.

The portion of the trench below the springing line of the sewer shall be excavated to conform to the external form and dimensions of the same. If the character of the ground met with in excavating is such that the external form of the sewer can not be preserved, the excavation shall be made to conform as nearly as possible to the external shape and dimensions of the sewer, and the space between the external sewer lines and the bottom and sides of the excavation as made, for a width equal to the greatest outside horizontal diameter of the sewer, shall be filled with hydraulic cement, concrete, or brick masonry, as directed.

If the material found in the sewer trench be, in the opinion of the engineer, unsuitable for a foundation, upon receipt of a written order it shall be removed by the contractor to such depth and width as may be directed, and suitable material shall be deposited in its place. This additional excavation and deposited material will be paid for as extra work.

The utmost care shall be taken to spare the roots of shade trees, and to protect trees and shrubbery in public parks adjacent to line of work from injury. Also care must be taken to avoid unnecessary damages to park surfaces and roadways during construction.

Whenever it is necessary to intercept work near, or in any way interfere with any public or house sewer, drainpipe, catch basin, culvert, or other similar structure, the contractor shall maintain the same in working order, and shall repair and make good any damage done to or by any of them during the progress of the work.

During construction, permission may be secured to substitute for any sewer in use which is affected by the work hereby contracted for a drain upon an approved location of equal capacity and of substantial construction, subject in all particulars to the approval of the engineer.

10. *Rock.*—Only such ledge or rock as in the opinion of the engineer requires blasting for its removal, or bowlders of one-half cubic yard or more in volume which are

removed from the trench, will be estimated as rock excavation. Before beginning rock excavation the contractor must procure a written order from the engineer. All excavated material shall be considered and classed as ordinary excavation, except rock removed by special orders as above. Indurated gravel, loose or disintegrated rock, and materials of like character, in the opinion of the engineer, will not be classed as rock.

For rock excavated from trench $3 per cubic yard will be allowed the contractor and excavation classified as rock will not be included also as ordinary excavation.

11. *Blasting.*—Before blasting the contractor must procure a written order from the engineer.

Blasts shall be covered with heavy timbers chained together. Caps or other explosives shall in no case be kept in the same place in which dynamite or other explosives are stored; and, in general, the precaution against accidents from blasting shall be entirely satisfactory to the engineer. The contractor shall be liable for all damages to persons or property caused by blasts or explosives.

12. *Back filling.*—The back filling must be brought up evenly on both sides of the sewer with the best material from the excavation, so that no unbalanced pressure shall be brought upon the masonry. It shall be spread in horizontal layers not exceeding 6 inches in depth before ramming, and thoroughly rammed to the top of the trench. No less than two men shall be employed in ramming for each shoveler engaged in replacing the back filling, which shall be compacted with iron-shod rammers, each weighing not less than 12 pounds. When the back filling is deposited by means of wheelbarrows, carts, or wagons, or by machinery, the ramming shall be done as directed by the engineer.

All slides or caving of sides of the trenches or cuts shall be taken out and back filled by the contractor.

As the trench is refilled, the bracing, etc., shall be removed in such manner as to prevent the caving of the sides of the trench. If sheeting is used, so much of it as extends below the crown of the arch of the basin must be withdrawn, unless otherwise directed by the engineer, after refilling over the haunches, but before more than 6 inches of earth is placed on the crown of arch, and before the center is struck.

As the sheet planks are withdrawn the vacancies left by each shall be carefully refilled by ramming with tools especially adapted for the purpose, by watering or otherwise, as may be directed.

13. *Materials.*—The contractor will be furnished at the District property yards with all the necessary sewer pipes, manhole steps, and cast-iron manhole tops with covers, the value of which material, actually used in the work, will not be charged against him. He will also be furnished at the District yards with all the cement, invert blocks and vitrified bricks required for the work, the value of which will be charged against him at the following rates: Portland cement, $1.50 per barrel; invert blocks, $0.50 per linear foot; vitrified bricks, $18 per 1,000.

Where cement is furnished in bags, the bags will be returned by the contractor or charged against him at the rate of $0.11 each.

The contractor shall convey materials from the points where they are delivered by the commissioners, and store the same in the vicinity of the works. He shall be responsible for the loss incurred, or damage done, to said materials from the time of their delivery until the work is accepted. No materials shall be applied to other use than that for which they are issued.

The materials from the trenches and those used in constructing the sewer appurtenances shall be so deposited as not to hinder nor endanger public travel, and so that free access may be had at all times to all fire plugs, water gates, manholes, and catch basins in the vicinity of the work.

14. *Concrete masonry.*—Concrete masonry will be classified as follows:

Concrete masonry A will be composed of—1 barrel Portland cement (net weight 380 pounds), 8 cubic feet sand, 8 cubic feet pebbles, 8 cubic feet broken stone; water as directed by the engineer.

Concrete masonry B will be composed of—1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 10 cubic feet pebbles, 10 cubic feet broken stone; water as directed by the engineer.

Concrete masonry C will be composed of—1 barrel Portland cement (net weight 380 pounds), 12 cubic feet sand, 12 cubic feet pebbles, 12 cubic feet broken stone; water as directed by the engineer.

Concrete masonry D will be composed of—1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 20 cubic feet pebbles; water as directed by the engineer.

Suitable appliances, satisfactory to the engineer, for measuring the ingredients for each batch of concrete, shall be kept on the line of the work.

15. *Mixing concrete.*—The thorough mixing and incorporation of all materials will be required. If done by hand labor, the dry cement and sand shall be mixed and turned over by skilled workmen, with shovels, not less than six times before the water is added; the pebbles and broken stone, after being wetted, shall be added to the mixed cement, sand, and water. The whole mass shall then be thoroughly turned over by skilled workmen, with shovels, not less than four times, until every particle of stone is ompletely enveloped with mortar.

The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men.

No concrete which has once set shall be used as metal for mixing a new batch.

16. *Placing concrete.*—The concrete shall not be thrown or dumped from a height but must be lowered in a vessel and so carefully deposited as to retain the constituents evenly incorporated, as mixed, entirely free from foreign matter of any kind.

In lowering material into the trenches care should be taken not to throw dirt upon freshly laid concrete or other masonry in place. At all stages and for all classes of work concrete and mortar must be kept as free as possible from dirt of every kind, and if unavoidably mixed with dirt, shall be removed and replaced to the satisfaction of the engineer.

No concrete or other work shall be laid in water, and no water shall be thrown upon or allowed to flow over or rise upon masonry until the mortar has had ample time to become set.

Each batch of concrete shall be spread in place in horizontal layers not exceeding 5 inches in thickness before ramming, and shall be at once thoroughly compacted by ramming.

When a layer of concrete has become set, it will be carefully cleaned of all dirt or loose fragments, and a thin layer of mortar spread thereon before depositing the fresh concrete.

Concrete shall not be used after it has begun to show evidences of setting.

17. *Molds, etc.*—Strong molds, forms and centers, satisfactory to the engineer, made to fit the curves and shapes of all work done under this contract shall be provided by the contractor for each stage and section of the work, and when they lose their proper dimensions or shape, they shall be replaced by others. Planking, forming the faces of all exposed walls, shall be so matched and placed as to give an even and uniform surface to the concrete. Before being used, the molds shall be scraped clean of cement and dirt. Their setting up, striking and general management shall conform to directions given by the engineer. For concrete inverts. where brick lining is omitted, sheet steel collapsible forms must be used. All work must be specially smooth and well filled, and no plastering will be allowed.

When, in the opinion of the engineer, it is necessary to protect the masonry from injury, the sewer shall be braced inside, without any additional charge. The bracing shall be done in a manner satisfactory to the engineer and it shall be left in place until he shall direct its removal.

18. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

19. *Sand.*—Sand for concrete and sand for mortar shall be clean, sharp sand, containing both fine and coarse grains, free from mud, sewage, mica, or other foreign matter, and at least equal in desirable qualities to the samples in the property office, District of Columbia, marked "Sample of sand for paving and concrete," and "Sample of sand for brickwork and plastering," respectively.

20. *Pebbles.*—Pebbles shall be from fine bank or river gravel, thoroughly screened, free from enrthy or other foreign matter, and small enough to pass through a ring 1½ inches in diameter, and shall not contain more than 5 per cent of material which shall pass through a No. 10 sieve.

21. *Broken stone.*—Broken stone for concrete masonry must be hard and of durable character, the run of the crusher, and it shall not contain more than 1 per cent of materials passing a No. 10 sieve. It shall be thoroughly cleansed from all foreign substances, and if so ordered by the engineer, it shall be screened and washed. Detritus, or any material other than hard, angular fragments of stone, shall be considered a foreign substance. Every piece of stone for concrete masonry must be small enough in largest dimension to pass through a ring 2 inches in diameter.

22. *Mortar.*—Mortar used in this work shall be composed of Portland cement in perfect condition and loose, dry sand in the proportion of 1 barrel of cement (net weight 380 pounds), and 9 cubic feet of mortar sand, thoroughly mixed dry, and a sufficient quantity of water afterwards added to make a rather stiff paste. It shall be used within an hour after the addition of the water, but no mortar shall be used after having become hard or set.

23. *Mixing mortar.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned

over and mixed with shovels by skilled workmen not less than six times before the water is added.

24. *Platforms.*—Platforms shall be provided upon which all sand, pebbles, and broken stone shall be placed when brought upon the line of the work, and there kept until used.

25. *Mortar boxes.*—Tight mortar boxes shall be provided by the contractor, and no mortar shall be made otherwise than in such boxes, except for concrete. No deposits of sand or mixing of mortar will be permitted upon pavements.

26. *Invert blocks.*—Invert blocks shall be laid true to line and grade. A concrete bed of the required shape and dimensions shall first be prepared, and a layer of mortar one-half inch thick spread upon this bed. Upon this coat of mortar the blocks shall be laid, and each block shall be carefully pressed down and bedded upon the mortar, so as to insure a close contact throughout the bottom and back of surface of the blocks. The joints between consecutive blocks shall be full mortar joints and as close as practicable.

27. *Vitrified blocks.*—Each course of vitrified invert bricks shall be laid in full mortar joints truly on line, and the joints upon the face of the work shall not exceed three-sixteenths inch in thickness.

28. *Bricks.*—Bricks used shall be of the best quality of whole new bricks, of uniform size, compact texture, burned hard and entirely through, with true surface, free from injurious cracks and flaws, tough and strong, and having a clear ring when struck together. They must have a crushing strength of not less than 4,500 pounds per square inch, and must not absorb more than 10 per cent of their weight of water, after having been thoroughly dried and then immersed for 24 hours in water. Samples will be subject to such tests as may be satisfactory to the engineer.

The bricks used upon the work must at least equal in quality the sample bricks in the property office, District of Columbia.

The truest and smoothest bricks will be used in the face of the masonry. All bricks delivered for use shall be culled by the contractor when required. No bricks rejected in the culling shall be used in any work done under this contract.

29. *Brickwork.*—Bricks must be thoroughly wet by immersion immediately before laying. Every course shall be laid with a line Every brick must be thoroughly laid in full mortar joints on bottom, side, and end, which, for each brick must be formed by one operation. In no case is the joint to be made by grouting, or by working in mortar after laying the brick. No joint shall exceed three-eighths inch in thickness. All joints on faces shall be trowel struck.

Brick masonry below the springing line in brick sewers must be well and firmly bedded upon the foundation prepared for it or upon the wall of the adjacent excavation, as the case may be; and all spaces which would otherwise exist between the outer lines of the sewer and the walls of the foundation or excavation must be filled with hydraulic cement mortar, concrete, or brick masonry, as may be directed.

All unfinished brick masonry must be "racked back" or toothed, as may be directed, and when new work is joined to the unfinished portion, the latter must be thoroughly cleansed.

Brick masonry of sides and arches shall be bonded and keyed as directed, especial care being exercised with each ring against laying too large joints at the back. All joints shall be normal to the section of the sewer and all "lipping" of brick must be carefully avoided.

30. *Arches.*—Concrete arches shall be allowed to set at least 24 hours before any back filling or other weight shall be put upon them, and no walking or working thereon shall be allowed during said time.

31. *Steel reenforcement.*—Steel reenforcement, where required, will be furnished by the District of Columbia and the contractor will be required to handle and place same as directed, for which he will be given an extra order as provided for in paragraph No. 12 of the General Stipulations.

32. *Plastering.*—As soon as practicable after the "keying up" is completed the back of every arch of brick or concrete shall be thoroughly cleaned of dirt and loose or projecting mortar, and shall then be smoothly plastered, from the springing line to the crown, with a coat of mortar three-eighths inch thick; the work to be done by skilled workmen, using tools satisfactory to the engineer. This coat shall be allowed to become fully set before any back filling is placed or walking allowed upon it.

33. *Sewer pipe.*—Sewer pipe will be of the ring or plain cylindrical pattern.

34. *Laying sewer pipe.*—Laying pipe sewer shall be executed in the following manner: The trench shall first be excavated by the use of the prescribed form to the required depth, shape, and dimensions; concrete shall then be compactly rammed in the bottom to the required depth, and its upper surface brought to a plane lower than the grade of the sewer by thickness of the wall of the pipe. The pipe must be

perfectly supported throughout its entire length upon its concrete bed; bringing the pipe to grade by means of stone, pieces of band, etc., will not be permitted. Concrete shall then be rammed upon the sides and haunches of the pipe to the full specified width and thickness, care being taken that no void spaces exist. The greatest care must be exercised that the alignment and grade of the pipes be not disturbed. The joints between the pipes shall be closed by pointing with stiff mortar, after which a layer of concrete shall be carried over them to a thickness of not less than 4 inches at any point, and having top and bottom widths of not less than 12 inches and 14 inches respectively. During the suspension of the work at night or at other times a suitable stopper shall be placed in the last pipe laid to prevent earth from washing in. No sand, mud, mortar, concrete, or other material shall be allowed on the inside of pipe sewers. Upon completion they must be left straight, clean, smooth, and in every other respect acceptable. Mortar and concrete shall be allowed to set before any back-filling is placed or walking is allowed upon the sewer, and the greatest care must be taken not to disturb the pipes, haunching, and banding.

35. *Manholes.*—Brick manholes of the form shown on the drawing shall be constructed in the sewers wherever ordered by the engineer.

In sewers of greater span than 3 feet, the manholes shall spring from one side of the arch; in sewers having a span of 3 feet or less, the axis of the manholes shall be directly over the center of the sewer.

Connection for public and house sewers and catch-basins shall be built into the manholes wherever required.

Each manhole shall have steps of wrought iron, built into brickwork, as shown on the drawings. Similar steps shall be built into the inverts of the sewers at the manholes as the brickwork progresses, as may be directed.

The contractor shall carefully and securely fit each manhole with a cast-iron frame and cover, as shown on the drawings.

36. *Water-tight work.*—Water-tight work is required in all construction.

37. *Connections.*—Connections with existing sewers shall be made by the contractor according to directions given by the engineer. The right to permit the connection of any public or house sewer with a sewer under construction before completion of the latter is expressly reserved to the commissioners.

38. *Replacing.*—When necessary to pump sewage in replacing and laying relief sewers, the material pumped shall be carried by means of hose or other water-tight conveyor to the sewer or manhole designated by the engineer, and it shall not be allowed to flow into or over the surface.

39. *Piling.*—Piles are to be not less than 8 inches in diameter at the small end, of live timber, sound, straight and free from rot, large knots, wind shakes and all other defects. They may be of pine, spruce, white oak, or such other durable timber as the engineer may approve. They are to be well and carefully driven with small end down, plumb and true to position, by a heavy hammer, delivering blows in rapid succession, to a penetration under the last blow of one-half inch for a hammer weighing 2,000 pounds, falling 12 feet.

Each pile shall be stripped of bark, have all knots pared smooth, and shall have the lower end squared or pointed before the driving, as may be directed.

After driving, the pile shall be cut off so as to form a true and even bearing for the cap timber, which shall be fastened to each pile by a 2-inch treenail of white oak, Georgia or Florida pine, or hickory, or a 1-inch drift bolt driven through the cap and 10 inches into the head of the pile. Any pile split or otherwise injured in driving, or driven out of position will be replaced by a sound one in true position. The top of any pile shall not be drawn over more than 9 inches after driving to allow capping. Any pile which is driven a greater distance from its true position than 9 inches, or whose penetration exceeds one-half inch under the last blow, will be rejected, and must be replaced by a pile driven adjacent thereto as directed by the engineer. While being driven, should a pile head become broomed or otherwise injured so as to prevent effective driving, the top shall be sawed off as directed. When necessary, in the judgment of the engineer, each pile shall be bound, while driving, with a strong iron band, of a proper size to protect pile head. In all cases the pile must refuse for the penetration specified, with the top sufficiently above subgrade to permit cutting off all that portion of the piles split or otherwise injured in any way by the process of driving, when the pile is sawed off at subgrade. In no case will the use of a "follower" be permitted. The piles must be carefully sawed off by a horizontal cut at the required grade line. For piles rejected for any cause whatever no allowance will be made.

40. *Lumber.*—All lumber for use in the completed structure must be sound, straight-grained, and free from sap, loose or rotten knots, wind shakes, or any other defect which would tend to impair its strength or durability; must be straight, of the dimensions given with square edges, and uniform width and thickness throughout each

piece. Each floor plank must be secured to each cap timber upon which it rests by two 6-inch spikes. All framing must be done in a thorough, workmanlike manner, and both material and workmanship will be subject to the inspection and approval of the engineer.

41. *Foremen.*—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer.

All foremen, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

42. *Inspection.*—The contractor shall, when requested, provide the engineer with such ladders, lanterns, tools, and labor, samples, and other facilities as may be necessary for inspecting materials and work.

Imperfect materials or work which may be discovered shall be replaced or corrected immediately on the requirement of the engineer, notwithstanding that it may have been overlooked by the proper inspector, and included in a partial payment. Materials condemned or rejected by the engineer may be branded or otherwise marked, and shall on his demand be at once removed to a satisfactory distance from the work. Any omission to disapprove the work at the time of inspection, or at the time of any monthly or other estimate, shall not relieve the contractor of any of his obligations, and all work of whatever kind which during its progress and before it is finally accepted may become damaged or prove unacceptable for any cause, shall be removed by the contractor and replaced by good and satisfactory work. If not removed within 24 hours after written notice from the engineer, it shall be removed by that officer and the cost charged to the contractor and deducted from any amount due or which may become due him.

FORMS ACCOMPANYING ALL SPECIFICATIONS.

GENERAL STIPULATIONS.

These stipulations are a part of the specifications.

1. *Bond.*—Good and sufficient bond in the penal sum equal to at least 25 per cent of the estimated amount of the contract, with sureties or a surety company satisfactory to the commissioners, will be required from all contractors, guaranteeing that their contract will be faithfully performed; that the contractor or contractors will be responsible for all claims for damages to persons, property, or premises arising out of his or their operations prior to the acceptance of the finished work, and that he or they will promptly make payments to all persons supplying him or them with labor and materials in the prosecution of the work provided for in the contract. In the event that the sureties or surety company become unsatisfactory to the said commissioners they may in their discretion require from the contractor an additional or new bond in the same or lesser penal sum, with sureties or a surety company satisfactory to them, and to be conditioned as above required. Upon the failure to furnish such additional or new bond within 30 days after written notice so to do, all payments under this contract will be withheld until such additional or new bond is furnished.

2. *Transfers.*—No contract or any interest therein shall be transferred by the parties to whom the award is made; such transfers will be null and void, and will cause the contract to be annulled and the work to be given to other parties under the conditions mentioned herein.

3. *Patents.*—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

4. *Contractor's risk.*—All loss or damage due to negligence or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same, or from the action of the elements, will be sustained by the contractor.

5. *Employees.*—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer. He shall so conduct his operations as to interfere with the work of other District contractors as little as possible. The foremen, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

An employee or agent of the contractor who shall use profane or abusive language to the inspector, or otherwise impede or embarrass him in the performance of his duty, or who, in the opinion of the engineer, is careless or incompetent, or obstructs the progress of the work, or disobeys or evades the instructions given by the engineer, shall be immediately discharged and not again employed without the consent of the engineer.

6. *Weather.*—The contractor shall suspend all work under the contract when notified by the engineer that the weather is unsuitable for carrying it on.

If work is allowed during cold or freezing weather, the contractor shall take such additional precautions as the engineer shall require, without additional expense, and under no circumstances shall materials be used which have been injured by the weather.

7. *Inspection.*—Inspectors may be appointed who shall have access to all parts of the work at all times and whose duty it shall be to point out to the contractors any neglect or disregard of the specifications of contract; but the right of final rejection of the work will not be waived at any time. Upon all technical questions concerning the execution of the work, in accordance with the specifications and measurements thereof, the decision of the engineer shall be final. Ordinarily one inspector will be employed by the District of Columbia for each section of the work under contract; but if, on account of any apparent disregard of the specifications, additional inspectors shall be required, they will be employed by the District of Columbia, at the rate not to exceed $6 per diem each, and the cost of same will be charged to the contractor.

8. *Condemned work.*—All materials furnished and work done not in accordance with these specifications shall be removed within 24 hours after written notice from the engineer by and at the expense of the contractor, or in case of failure to do so, it shall be removed by the District of Columbia and the cost thereof charged to the contractor and deducted from the amount due or which may become due him. None but the best material of the several descriptions shall be used.

9. *District material.*—No materials furnished by the District shall be applied to any other use, public or private, than that for which they are issued to the contractor. The contractor will be held responsible for all materials delivered to him upon requisition, and shall be charged for all materials delivered upon said requisition. Should the amount of materials actually delivered and not properly accounted for exceed the amount used upon the work, the cost to the District of the difference must be made good by the contractor, and will be deducted from any moneys which may be due him.

Any material that is property of the District that is not accounted for by the contractor to the satisfaction of the engineer, will be charged against the contractor at the contract price for similar material.

10. *Failure.*—If the contractor shall delay or fail to commence with the delivery of the material or the performance of the work as specified herein, or shall, in the judgment of the Commissioners of the District of Columbia, fail to prosecute faithfully and diligently the work in accordance with the specifications and requirements of this contract, then, in either case, the said commissioners shall have the power to annul this contract by giving notice in writing to that effect to the contractor, and upon the giving of such notice all payments to the contractor under this contract shall cease, and all money or reserved percentage due or to become due thereunder, shall be retained by the said commissioners until the final completion and acceptance of the work herein stipulated to be done; and the said commissioners shall have the right to recover from the contractor whatever sums may be expended by the District of Columbia in completing the said contract in excess of the price herein stipulated to be paid the contractor for completing the same, and also all cost of inspection and superintendence, including all necessary traveling expenses connected therewith, incurred by the said District of Columbia in excess of those payable by the said District of Columbia during the period herein allowed for the completion of the contract by the contractor, and the said commissioners may deduct all the above-mentioned sums out of or from the money or reserved percentage retained as aforesaid; and upon the giving of the said notice the said commissioners shall be authorized to proceed to secure the performance of the work or delivery of the materials, by contract or otherwise, in accordance with law.

11. *Payment.*—Payments will be made monthly, provided the progress of the work is satisfactory, less 10 per cent of each estimate, to be withheld until final payment, but 10 per cent of the cost of the work will be retained and invested as hereinbefore provided.

12. *Conveniences.*—The contractor shall provide, for use of the District inspectors stationed at paving plant, suitable office and testing room with such plain furniture as may be necessary for the proper transaction of their business as agents for the District. They shall also furnish, when needed for use of laborers on line of work, necessary toilet conveniences secluded from public observation.

13. *Cleaning up.*—On the completion of work it shall be thoroughly cleaned before it will be accepted.

14. *Lines.*—All necessary lines and levels will be given by the engineer by means of suitable marks, and in establishing them the contractor shall provide such materials and assistance as may be required by the engineer. All marks given are to be carefully preserved and if destroyed through carelessness the cost of replacing them shall be charged against the contractor at a fixed price of $2 for each point, to be deducted from any money found due at final settlement.

15. All loss or damage due to negligence or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same or from the action of the elements, will be sustained by the contractors.

16. *Interpretation.*—Any doubt as to the meaning of these specifications will be explained by the engineer, who shall have the right to correct any errors or omissions in them when such correction is necessary for the proper fulfillment of their intention. Whenever the word "commissioners" is used in these specifications, it is understood to designate the Commissioners of the District of Columbia. Whenever the word "engineer" is used, it is understood to designate the engineer commissioner of the District of Columbia, or, in his absence, his duly appointed assistants, assistant engineers, and inspectors representing him, limited by the special duties intrusted to them.

INSTRUCTIONS TO BIDDERS.

1. *Signature.*—Proposals must be signed by the bidder with the signature in full When a firm is a bidder, the agent who signs the firm name to the proposal shall state, in addition, the names of the individuals composing the firm. When a corporation is a bidder, the person signing shall state under the laws of what State the corporation was chartered, and the name and title of the officer having authority under the by-laws to sign contracts. The proposal shall also bear the seal of the corporation attested by its secretary. Anyone signing the proposal as agent must file with it legal evidence of his authority so to do.

2. *Address.*—Post-office address, county, and State must be given after the signature.

3. *Prices.*—All prices must be written in words as well as expressed in figures. In case of variation the written prices shall govern.

4. *Identification of proposal.*—Proposals will be placed in a sealed envelope, so marked as to indicate its contents without being opened. This envelope will be placed in another addressed to the Commissioners of the District of Columbia, Washington, D. C.; if forwarded otherwise than by mail it must be delivered to the secretary to the Board of Commissioners.

5. *Rejection of bids.*—Reasonable grounds for supposing that any bidder is interested in more than one proposal for the same item will cause the rejection of all proposals in which he is interested. The commissioners reserve the right to waive any informality in the proposals received, and to reject any and all proposals, or parts of a proposal, and to make the award in such manner as they consider best for the interests of the District of Columbia. Proposals received after the time advertised for opening bids will be returned unopened. No proposal will be accepted from any failing bidder or contractor known as such on the records of the District of Columbia, for 20 years prior to the date of bid.

6. *Experience.*—Bidders must present satisfactory evidence that they have been regularly engaged in the business of constructing such work as they propose to execute, and in case the lowest responsible bidder has never done any work for the District of Columbia, he must, prior to the award of contract, be able to show work done by him within a distance of 1,000 miles from the District of Columbia, and may be required to pay the necessary expenses of an inspection of such work by such representatives of the District of Columbia, not exceeding two in number, as may be sent by the engineer to examine it.

7. *Capital and plant.*—Bidders must present satisfactory evidence that they are fully prepared with the necessary capital, materials, and machinery to conduct the work to be contracted for to the satisfaction of the commissioners, and to begin it promptly when ordered.

8. *Guaranty deposit.*—Bidders will inclose a receipt of the collector of taxes for the District of Columbia for the amount named in the form of proposal as a guarantee of good faith, and as reasonable fixed and liquidated damages, and not as a penalty, to the District of Columbia. and which they agree to forfeit in the event of their failure to enter into contract, with good and sufficient sureties, within 10 days after notification of acceptance of their proposal.

9. *Return of deposits.*—Bidders' deposits will be returned on application to the chief clerk, engineer department, to unsuccessful bidders after award of contract is made and to successful bidders after execution of contract.

10. *Sundays or legal holidays.*—No work shall be done on Sundays or legal holidays, except in cases of emergency, and then only with the consent of the engineer; nor shall any work be done at night unless authorized in writing by the engineer.

11. *Changes.*—Changes, alterations, or interlineations must be explained by footnote in proposal.

12. *Withdrawals.*—If a bidder wishes to withdraw his proposal he may do so before the time fixed for the opening, without prejudice to himself, by communicating his

purpose in writing to the secretary to the board of Commissioners, and, when reached it shall be handed to him or to his authorized agent, unread.

13. *Breach.*—No waiver of any breach of the contract shall constitute a waiver of any subsequent breach of any part thereof, nor of the contract.

14. *Laws affecting public work.*—The attention of bidders is invited to the "Act regulating retent on contracts with the District of Columbia, approved March 31, 1906:"

"That on all contracts made by the District of Columbia for construction work there shall be held a retent of ten per centum of the cost of such construction work as a guaranty fund to keep the work done under such contracts in repair, and that the terms of such contracts shall be strictly and faithfully performed. On contracts for the construction of asphalt, tar, brick, cement, or stone pavements the retent shall be held for a term of five years from the date of the completion of the contract. On contracts for the construction of bridges and sewers the retent shall be held for a term of one year from the date of completion of contract. On contracts for the construction of buildings and other contracts for construction work, the retent shall be held until the completion of the work. All retents for one year or more shall be deposited with the Treasurer of the United States as now required by law."

Also the following clause of the act of March 3, 1887:

"That the Treasurer of the United States, as commissioner of the sinking fund of the District of Columbia, shall not be compelled hereafter to invest money retained from District contracts hereafter entered into; but may, in his discretion retain said funds without interest, or invest the same in any class of United States or District of Columbia bonds, at the request and at the risk of the contractor, whenever the sum retained on any contract shall reach the sum of one hundred dollars or more; any sum less than one hundred dollars shall be retained without interest as above."

Also to public act No. 82, approved February 28, 1899, relative to payment of claims for material and labor furnished for District of Columbia buildings, and to the public act relative to the limitation of the hours of daily service of laborers and mechanics upon the public works of the United States and the District of Columbia.

All laws and regulations of the United States and of the District of Columbia, especially in so far as they relate to the protection of life and property, are to be strictly observed.

15. *Eight-hour law.*—The following provision made in accordance with public act of Congress No. 199, approved June 19, 1912, is made a part of this contract.

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the contractor or any subcontractor contracting for any part of the work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work under a penalty for each violation of this provision of $5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work.

It shall be the duty of the inspector or inspectors or other employees of the District of Columbia, upon observation or investigation forthwith to make report to the Commissioners of the District of Columbia of all violations of the provisions of this paragraph and of said act together with the name of each laborer or mechanic who has been required or permitted to labor in violation of the provisions hereof, the day or days of such violation, and the amount of penalties accruing under the provisions hereof by reason of such violation. This sum shall be withheld for the use and benefit of the District of Columbia by the auditor of the District of Columbia out of any money due the contractor, whether the violation is by the contractor or any subcontractor. Any contractor or subcontractor aggrieved by the withholding of any penalty as hereinbefore provided shall have the right within six months thereafter to appeal to the Commissioners of the District of Columbia, who shall have the power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty hereinbefore provided such contractor or subcontractor may within six months after the decision of said commissioners file a claim in the Court of Claims, which shall have jurisdiction to hear and decide the matter in like manner as in other cases before said court.

Nothing in this provision shall be construed to repeal or modify the act of Congress relating to the limitation of the hours of daily service of labor and mechanics employed upon the public works of the United States or the District of Columbia, approved August 1, 1892, as modified by acts of Congress approved February 27, 1906, and June 30, 1906.

This provision shall not apply to contracts which have been or may be entered into under the provisions of appropriation acts approved prior to June 19, 1912.

The provisions hereof shall become effective and be in force on and after January 1, 1913.

INDEX.

Page.

Allen, W. C., electrical engineer, report of 243
Alley and street cleaning 14, 64
Alley and street extensions 13, 89
Alleys:
  Condemnation proceedings for 89
  Paved under assessment system 52
  Paved under permit system 48
Alleys and sidewalks, paving of 9–10, 35
Anacostia River:
  Improvement of 27
  Ownership of land and riparian rights along 27
  Wharves along 282
Anacostia River and Flats 27
  Reclamation and development of 27
Appointments in Engineer Department 6
Aqueduct, Washington, transfer of 32
Architect, municipal, report of 193
Ashes, collection and disposal of 64
Ashford, Snowden, municipal architect, report of 193
Asphalt plant, municipal 9
Asphalt, sheet:
  Extent of 8, 45
  Prices paid for 7
  Specifications for laying 291
  Specifications for repairing 305
Asphalt, tests of 80
Asphalt and cements, report of inspector of 80
Asphalt block:
  Extent of 8, 45
  Prices paid for 7
  Specifications for laying 299
Asphaltic macadam:
  Extent of 8, 45
  Prices paid for 7
Asphalt mixtures, tests of 80
Asphalt plant:
  Municipal, investigation as to cost of 9
  Portable, purchase of 9
Assessment work (surface), statement of 52
Assessment and permit work, sewers 100, 161–164
Assistants to the Engineer Commissioner:
  Maj. E. M. Markham, report of 96
  Capt. Mark Brooke, report of 35
Automobile board 23
  Report of 241
Automobile field wagons 156
Automobiles, permits for 242
Bailey, Thos. C. J., jr., engineer of bridges, report of 43
Baths in school buildings 192
Baths, public 192
Bidders, instructions to 325
Bituminous macadam pavement 41
  Specifications for 291
Block, asphalt:
  Extent of 8, 45
  Prices paid for 7
  Specifications for laying 299